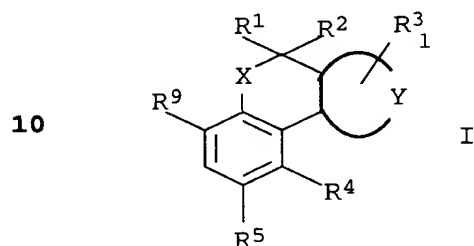


Tricyclic benzoylpyrazole derivatives

The present invention relates to novel tricyclic benzoylpyrazole
5 derivatives of the formula I



15 where:

- X is oxygen, sulfur, S=O, S(=O)₂, CR⁶R⁷, NR⁸ or a bond;
- 20 Y together with the two carbons to which it is attached forms a saturated, partially saturated or unsaturated 5- or 6-membered heterocycle which contains one to three identical or different heteroatoms selected from the following group:
- 25 oxygen, sulfur or nitrogen;
- R¹, R², R⁶, R⁷ are hydrogen, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₁-C₆-alkoxy or C₁-C₆-haloalkoxy;
- 30 R³ is halogen, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₁-C₆-alkoxy or C₁-C₆-haloalkoxy;
- R⁴ is hydrogen, nitro, halogen, cyano, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₁-C₆-alkoxy, C₁-C₆-haloalkoxy, C₁-C₆-alkylthio, C₁-C₆-haloalkylthio, C₁-C₆-alkylsulfinyl, C₁-C₆-haloalkylsulfinyl, C₁-C₆-alkylsulfonyl, C₁-C₆-haloalkylsulfonyl, aminosulfonyl, N-(C₁-C₆-alkyl)aminosulfonyl, N,N-di(C₁-C₆-alkyl)aminosulfonyl, N-(C₁-C₆-alkylsulfonyl)amino, N-(C₁-C₆-haloalkylsulfonyl)amino, N-(C₁-C₆-alkyl)-N-(C₁-C₆-alkylsulfonyl)amino or N-(C₁-C₆-alkyl)-N-(C₁-C₆-haloalkylsulfonyl)amino;
- 35
- 40
- 45 R⁵ is hydrogen, C₁-C₆-alkyl or halogen;

2

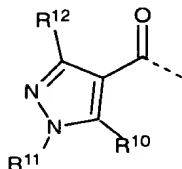
R^8 is hydrogen, C_1 - C_6 -alkyl, C_1 - C_6 -haloalkyl, C_1 - C_6 -alkylcarbonyl, formyl, C_1 - C_6 -alkoxycarbonyl, C_1 - C_6 -haloalkoxycarbonyl, C_1 - C_6 -alkylsulfonyl or C_1 - C_6 -haloalkylsulfonyl;

5

1 is 0, 1 or 2;

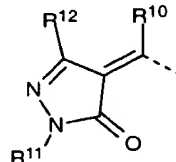
R^9 is a radical IIa or IIb

10



15

IIa



IIb

where

20 R^{10} is hydroxyl, mercapto, halogen, OR^{13} , SR^{13} , SO_2R^{14} , $NR^{15}R^{16}$ or N-bonded heterocyclyl, where the heterocyclyl radical may be partially or fully halogenated and/or may carry one to three of the following radicals:

25 nitro, cyano, C_1 - C_4 -alkyl, C_1 - C_4 -haloalkyl, C_1 - C_4 -alkoxy or C_1 - C_4 -haloalkoxy;

30 R^{11} is hydrogen, C_1 - C_6 -alkyl, C_1 - C_6 -haloalkyl, C_3 - C_6 -cycloalkyl, hydroxyl, C_1 - C_6 -alkoxy or C_1 - C_6 -haloalkoxy;

35 R^{12} is hydrogen, halogen, C_1 - C_6 -alkyl, C_1 - C_6 -haloalkyl, hydroxyl, C_1 - C_6 -alkoxy, C_1 - C_6 -haloalkoxy, C_1 - C_6 -alkylthio or C_1 - C_6 -haloalkylthio;

40 R^{13} is C_1 - C_6 -alkyl, C_3 - C_6 -alkenyl, C_3 - C_6 -haloalkenyl, C_3 - C_6 -alkynyl, C_3 - C_6 -haloalkynyl, C_3 - C_6 -cycloalkyl, C_1 - C_{20} -alkylcarbonyl, C_2 - C_{20} -alkenylcarbonyl, C_2 - C_6 -alkynylcarbonyl, C_3 - C_6 -cycloalkylcarbonyl, C_1 - C_6 -alkoxycarbonyl, C_3 - C_6 -alkenyloxycarbonyl, C_3 - C_6 -alkynyloxycarbonyl, C_1 - C_6 -alkylthiocarbonyl, C_1 - C_6 -alkylaminocarbonyl, C_3 - C_6 -alkenylaminocarbonyl, C_3 - C_6 -alkynylaminocarbonyl, N,N -di(C_1 - C_6 -alkyl)aminocarbonyl, N -(C_3 - C_6 -alkenyl)- N -(C_1 - C_6 -alkyl)aminocarbonyl, N -(C_3 - C_6 -alkynyl)- N -(C_1 - C_6 -alkyl)aminocarbonyl,

45

3

N-(C₁-C₆-alkoxy)-N-(C₁-C₆-alkyl)aminocarbonyl,
N-(C₃-C₆-alkenyl)-N-(C₁-C₆-alkoxy)aminocarbonyl,
N-(C₃-C₆-alkynyl)-N-(C₁-C₆-alkoxy)aminocarbonyl,
di(C₁-C₆-alkyl)aminothiocarbonyl,
5 C₁-C₆-alkylcarbonyl-C₁-C₆-alkyl,
C₁-C₆-alkoxyimino-C₁-C₆-alkyl,
N-(C₁-C₆-alkylamino)imino-C₁-C₆-alkyl or
N,N-di(C₁-C₆-alkylamino)imino-C₁-C₆-alkyl, where
10 the abovementioned alkyl, cycloalkyl and alkoxy
radicals may be partially or fully halogenated
and/or may carry one to three of the following
groups:
cyano, C₁-C₄-alkoxy, C₁-C₄-alkylthio,
di(C₁-C₄-alkyl)amino, C₁-C₄-alkylcarbonyl,
15 C₁-C₄-alkoxycarbonyl,
C₁-C₄-alkoxy-C₁-C₄-alkoxycarbonyl,
di(C₁-C₄-alkyl)amino-C₁-C₄-alkoxycarbonyl,
hydroxycarbonyl, C₁-C₄-alkylaminocarbonyl,
di(C₁-C₄-alkyl)aminocarbonyl, aminocarbonyl,
20 C₁-C₄-alkylcarbonyloxy or C₃-C₆-cycloalkyl;

is phenyl, heterocyclyl, phenyl-C₁-C₆-alkyl,
heterocyclyl-C₁-C₆-alkyl,
phenylcarbonyl-C₁-C₆-alkyl,
25 heterocyclylcarbonyl-C₁-C₆-alkyl, phenylcarbonyl,
heterocyclylcarbonyl, phenoxycarbonyl,
phenyloxythiocarbonyl, heterocycliloxy carbonyl,
heterocycliloxythiocarbonyl, phenylaminocarbonyl,
N-(C₁-C₆-alkyl)-N-(phenyl)aminocarbonyl,
30 heterocyclylaminocarbonyl,
N-(C₁-C₆-alkyl)-N-(heterocyclyl)aminocarbonyl,
phenyl-C₂-C₆-alkenylcarbonyl or
heterocyclyl-C₂-C₆-alkenylcarbonyl, where the
phenyl and the heterocyclyl radical of the 18
35 lastmentioned substituents may be partially or
fully halogenated and/or may carry one to three of
the following radicals:
nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl,
C₁-C₄-alkoxy, C₁-C₄-haloalkoxy, heterocyclyl or
40 N-bonded heterocyclyl, where the two lastmentioned
substituents for their part may be partially or
fully halogenated and/or may carry one to three of
the following radicals:
nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl,
45 C₁-C₄-alkoxy or C₁-C₄-haloalkoxy;

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R¹⁴

is C₁-C₆-alkyl, C₃-C₆-alkenyl, C₃-C₆-haloalkenyl, C₃-C₆-alkynyl, C₃-C₆-haloalkynyl, C₃-C₆-cycloalkyl, C₁-C₆-alkoxy, di(C₁-C₆-alkyl)amino or di(C₁-C₆-haloalkyl)amino, where the abovementioned alkyl, cycloalkyl and alkoxy radicals may be partially or fully halogenated and/or may carry one to three of the following groups:
cyano, C₁-C₄-alkoxy, C₁-C₄-alkylthio, di(C₁-C₄-alkyl)amino, C₁-C₄-alkylcarbonyl, C₁-C₄-alkoxycarbonyl, C₁-C₄-alkoxy-C₁-C₄-alkoxycarbonyl, di(C₁-C₄-alkyl)amino-C₁-C₄-alkoxycarbonyl, hydroxycarbonyl, C₁-C₄-alkylaminocarbonyl, di(C₁-C₄-alkyl)aminocarbonyl, aminocarbonyl, C₁-C₄-alkylcarbonyloxy or C₃-C₆-cycloalkyl;

is phenyl, heterocyclyl, phenyl-C₁-C₆-alkyl, heterocyclyl-C₁-C₆-alkyl, phenoxy, heterocycliloxy, where the phenyl and the heterocyclyl radical of the lastmentioned substituents may be partially or fully halogenated and/or may carry one to three of the following radicals:
nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy or C₁-C₄-haloalkoxy;

R¹⁵

is C₁-C₆-alkyl, C₃-C₆-alkenyl, C₃-C₆-haloalkenyl, C₃-C₆-alkynyl, C₃-C₆-haloalkynyl, C₃-C₆-cycloalkyl, C₁-C₆-alkoxy, C₃-C₆-alkenyloxy, C₃-C₆-alkynyloxy, di(C₁-C₆-alkyl)amino or C₁-C₆-alkylcarbonylamino, where the abovementioned alkyl, cycloalkyl and alkoxy radicals may be partially or fully halogenated and/or may carry one to three radicals of the following group:
cyano, C₁-C₄-alkoxy, C₁-C₄-alkylthio, di(C₁-C₄-alkyl)amino, C₁-C₄-alkylcarbonyl, C₁-C₄-alkoxycarbonyl, C₁-C₄-alkoxy-C₁-C₄-alkoxycarbonyl, di(C₁-C₄-alkyl)amino-C₁-C₄-alkoxycarbonyl, hydroxycarbonyl, C₁-C₄-alkylaminocarbonyl, di(C₁-C₄-alkyl)aminocarbonyl, aminocarbonyl, C₁-C₄-alkylcarbonyloxy or C₃-C₆-cycloalkyl;

is phenyl, heterocyclyl, phenyl-C₁-C₆-alkyl or heterocyclyl-C₁-C₆-alkyl, where the phenyl or heterocyclyl radical of the four lastmentioned

5

substituents may be partially or fully halogenated and/or may carry one to three of the following radicals:

5 nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy or C₁-C₄-haloalkoxy;

R¹⁶ is C₁-C₆-alkyl, C₃-C₆-alkenyl, C₃-C₆-alkynyl or C₁-C₆-alkylcarbonyl;

10 and their agriculturally useful salts.

Moreover, the invention relates to processes and intermediates for preparing compounds of the formula I, to compositions comprising them, and to the use of these derivatives or of the
15 compositions comprising them for controlling harmful plants.

WO 97/19087 and EP-A 860 441 disclose tricyclic compounds which are characterized in that the respective benzoyl unit that they contain is fused via positions 3 and 4 with a bicycle. However,
20 the herbicidal properties of the prior-art compounds and their compatibility with crop plants are not entirely satisfactory. It is an object of the present invention to provide novel, biologically, in particular herbicidally, active compounds having improved properties.

25

We have found that this object is achieved by the tricyclic benzoylpyrazole derivatives of the formula I and their herbicidal action.

30 Furthermore, we have found processes and intermediates for synthesizing the compounds of the formula I. Likewise, we have found herbicidal compositions which comprise the compounds I and have very good herbicidal action. Moreover, we have found processes for preparing these compositions and methods for
35 controlling undesirable vegetation using the compounds I.

Depending on the substitution pattern, the compounds of the formula I can contain one or more chiral centers, in which case they are present as enantiomers or diastereomer mixtures. The
40 invention provides both the pure enantiomers or diastereomers and their mixtures.

The compounds of the formula I can also be present in the form of their agriculturally useful salts, the type of salt generally
45 being immaterial. Generally suitable are the salts of those cations or the acid addition salts of those acids whose cations

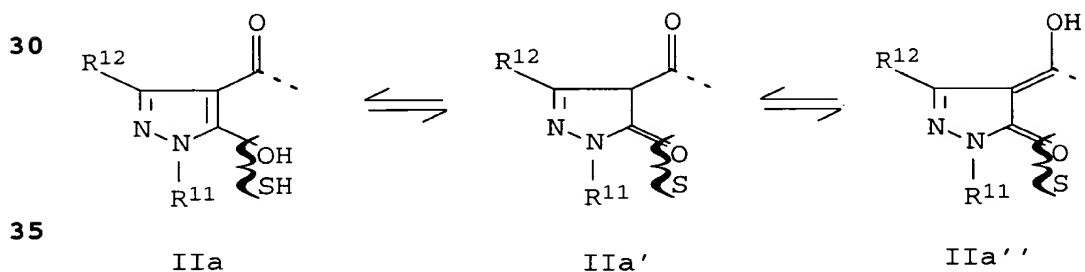
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and anions, respectively, do not negatively affect the herbicidal action of the compounds I.

- Suitable cations are, in particular, ions of the alkali metals, preferably lithium, sodium and potassium, of the alkaline earth metals, preferably calcium and magnesium, and of the transition metals, preferably manganese, copper, zinc and iron, and also ammonium, where, if desired, one to four hydrogen atoms may be replaced by C₁-C₄-alkyl, hydroxy-C₁-C₄-alkyl, C₁-C₄-alkoxy-C₁-C₄-alkyl, hydroxy-C₁-C₄-alkoxy-C₁-C₄-alkyl, phenyl or benzyl, preferably ammonium, dimethylammonium, diisopropylammonium, tetramethylammonium, tetrabutylammonium, 2-(2-hydroxyeth-1-oxy)eth-1-ylammonium, di(2-hydroxyeth-1-yl)ammonium, trimethylbenzylammonium, furthermore phosphonium ions, sulfonium ions, preferably tri(C₁-C₄-alkyl)sulfonium, and sulfoxonium ions, preferably tri(C₁-C₄-alkyl)sulfoxonium.

- Anions of useful acid addition salts are primarily chloride, bromide, fluoride, hydrogen sulfate, sulfate, dihydrogen phosphate, hydrogen phosphate, nitrate, hydrogen carbonate, carbonate, hexafluorosilicate, hexafluorophosphate, benzoate and the anions of C₁-C₄-alkanoic acids, preferably formate, acetate, propionate and butyrate.

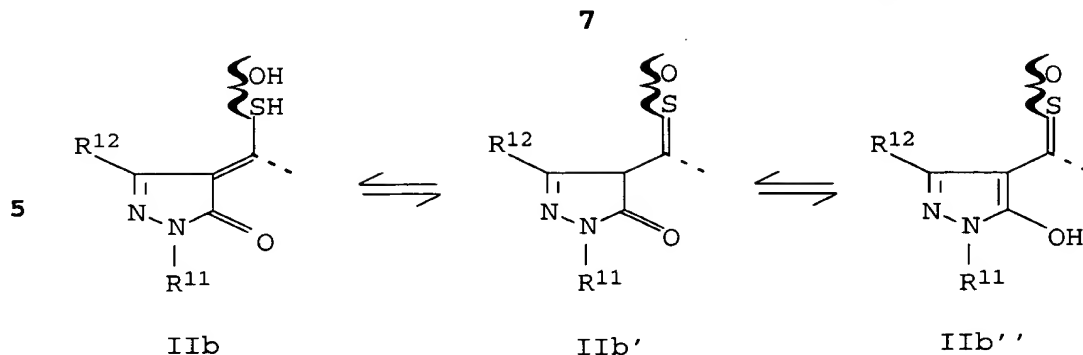
- In the case of R¹⁰ = hydroxyl or mercapto, IIa also represents the tautomeric forms IIa' and IIa''



- Likewise, in the case of R¹⁰ = hydroxyl or mercapto, IIb also represents the tautomeric forms IIb' and IIb''

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The organic molecular moieties mentioned for the substituents R^1 - R^{17} or as radicals on phenyl and heterocyclyl radicals are collective terms for individual enumerations of the individual group members. All hydrocarbon chains, i.e. all alkyl, haloalkyl, hydroxyalkyl, alkoxy, haloalkoxy, alkylthio, haloalkylthio, alkylsulfinyl, haloalkylsulfinyl, alkylsulfonyl, haloalkylsulfonyl, N-alkylaminosulfonyl, N,N-dialkylaminosulfonyl, N-alkylamino, N,N-dialkylamino, N-haloalkylamino, N,N-dihaloalkylamino, N-alkylsulfonylamino, N-haloalkylsulfonylamino, N-alkyl-N-alkylsulfonylamino, N-alkyl-N-haloalkylsulfonylamino, alkylcarbonyl, alkoxy carbonyl, haloalkoxy carbonyl, alkylthiocarbonyl, alkylcarbonyloxy, alkylaminocarbonyl, dialkylaminocarbonyl, dialkylaminothiocarbonyl, alkoxyalkyl, hydroxyalkoxyalkyl, alkylcarbonylalkyl, alkoxyiminoalkyl, N-(alkylamino)iminoalkyl, N-(dialkylamino)iminoalkyl, phenylalkenylcarbonyl, heterocyclylalkenylcarbonyl, N-alkoxy-N-alkylaminocarbonyl, N-alkyl-N-phenylaminocarbonyl, N-alkyl-N-heterocyclylaminocarbonyl, phenylalkyl, heterocyclylalkyl, phenylcarbonylalkyl, heterocyclylcarbonylalkyl, dialkylaminoalkoxy carbonyl, alkoxyalkoxy carbonyl, alkenylcarbonyl, alkenyloxy carbonyl, alkenylaminocarbonyl, N-alkenyl-N-alkylaminocarbonyl, N-alkenyl-N-alkoxyaminocarbonyl, alkynylcarbonyl, alkynyloxy carbonyl, alkynylaminocarbonyl, N-alkynyl-N-alkylaminocarbonyl, N-alkynyl-N-alkoxyaminocarbonyl, alkenyl, alkynyl, haloalkenyl, haloalkynyl, alkenyloxy and alkynyloxy moieties, may be straight-chain or branched. Unless indicated otherwise, halogenated substituents preferably carry one to five identical or different halogen atoms. The term halogen denotes in each case fluorine, chlorine, bromine or iodine.

Examples of other meanings are:

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- C₁-C₄-alkyl and the alkyl moieties of hydroxy-C₁-C₄-alkyl: for example methyl, ethyl, propyl, 1-methylethyl, butyl, 1-methylpropyl, 2-methylpropyl or 1,1-dimethylethyl;
- 5 - C₁-C₆-alkyl, and the alkyl moieties of
C₁-C₆-alkylcarbonyl-C₁-C₆-alkyl, C₁-C₆-alkoxyimino-C₁-C₆-alkyl,
N-(C₁-C₆-alkylamino)imino-C₁-C₆-alkyl,
N-(di-C₁-C₆-alkylamino)imino-C₁-C₆-alkyl,
N-(C₁-C₆-alkoxy)-N-(C₁-C₆-alkyl)aminocarbonyl,
- 10 N-(C₃-C₆-alkenyl)-N-(C₁-C₆-alkyl)aminocarbonyl,
N-(C₃-C₆-alkynyl)-N-(C₁-C₆-alkyl)aminocarbonyl,
N-(C₁-C₆-alkyl)-N-phenylaminocarbonyl,
N-(C₁-C₆-alkyl)-N-heterocyclylaminocarbonyl,
phenyl-C₁-C₆-alkyl,
- 15 N-(C₁-C₆-alkyl)-N-(C₁-C₆-alkylsulfonyl)amino,
N-(C₁-C₆-alkyl)-N-(C₁-C₆-haloalkylsulfonyl)amino,
heterocyclyl-C₁-C₆-alkyl, phenylcarbonyl-C₁-C₆-alkyl,
heterocyclylcarbonyl-C₁-C₆-alkyl: C₁-C₄-alkyl as mentioned
above, and also, for example, pentyl, 1-methylbutyl,
- 20 2-methylbutyl, 3-methylbutyl, 2,2-dimethylpropyl,
1-ethylpropyl, hexyl, 1,1-dimethylpropyl, 1,2-dimethylpropyl,
1-methylpentyl, 2-methylpentyl, 3-methylpentyl,
4-methylpentyl, 1,1-dimethylbutyl, 1,2-dimethylbutyl,
1,3-dimethylbutyl, 2,2-dimethylbutyl, 2,3-dimethylbutyl,
- 25 3,3-dimethylbutyl, 1-ethylbutyl, 2-ethylbutyl,
1,1,2-trimethylpropyl, 1-ethyl-1-methylpropyl or
1-ethyl-3-methylpropyl;
- C₁-C₄-haloalkyl: a C₁-C₄-alkyl radical as mentioned above
- 30 which is partially or fully substituted by fluorine,
chlorine, bromine and/or iodine, i.e., for example,
chloromethyl, dichloromethyl, trichloromethyl, fluoromethyl,
difluoromethyl, trifluoromethyl, chlorofluoromethyl,
dichlorofluoromethyl, chlorodifluoromethyl, 2-fluoroethyl,
- 35 2-chloroethyl, 2-bromoethyl, 2-iodoethyl, 2,2-difluoroethyl,
2,2,2-trifluoroethyl, 2-chloro-2-fluoroethyl,
2-chloro-2,2-difluoroethyl, 2,2-dichloro-2-fluoroethyl,
2,2,2-trichloroethyl, pentafluoroethyl, 2-fluoropropyl,
3-fluoropropyl, 2,2-difluoropropyl, 2,3-difluoropropyl,
- 40 2-chloropropyl, 3-chloropropyl, 2,3-dichloropropyl,
2-bromopropyl, 3-bromopropyl, 3,3,3-trifluoropropyl,
3,3,3-trichloropropyl, 2,2,3,3,3-pentafluoropropyl,
heptafluoropropyl, 1-(fluoromethyl)-2-fluoroethyl,
1-(chloromethyl)-2-chloroethyl, 1-(bromomethyl)-2-bromoethyl,
- 45 4-fluorobutyl, 4-chlorobutyl, 4-bromobutyl or
nonafluorobutyl;

- C₁-C₆-haloalkyl, and the haloalkyl moieties of N-C₁-C₆-haloalkylamino and N,N-(di-C₁-C₆-haloalkyl)amino: C₁-C₄-haloalkyl as mentioned above, and also, for example, 5-fluoropentyl, 5-chloropentyl, 5-bromopentyl, 5-iodopentyl, 5 undecafluoropentyl, 6-fluorohexyl, 6-chlorohexyl, 6-bromohexyl, 6-iodohexyl or dodecafluorohexyl;
- C₁-C₄-alkoxy: for example methoxy, ethoxy, propoxy, 1-methylethoxy, butoxy, 1-methylpropoxy, 2-methylpropoxy or 1,1-dimethylethoxy;
- C₁-C₆-alkoxy, and the alkoxy moieties of C₁-C₆-alkoxyimino-C₁-C₆-alkyl, N-(C₁-C₆-alkoxy)-N-(C₁-C₆-alkyl)aminocarbonyl, N-(C₃-C₆-alkenyl)-N-(C₁-C₆-alkoxy)aminocarbonyl and N-(C₃-C₆-alkynyl)-N-(C₁-C₆-alkoxy)aminocarbonyl: C₁-C₄-alkoxy as mentioned above, and also, for example, pentoxy, 1-methylbutoxy, 2-methylbutoxy, 3-methylbutoxy, 1,1-dimethylpropoxy, 1,2-dimethylpropoxy, 2,2-dimethylpropoxy, 1-ethylpropoxy, hexoxy, 1-methylpentoxy, 2-methylpentoxy, 3-methylpentoxy, 4-methylpentoxy, 1,1-dimethylbutoxy, 1,2-dimethylbutoxy, 1,3-dimethylbutoxy, 2,2-dimethylbutoxy, 2,3-dimethylbutoxy, 3,3-dimethylbutoxy, 1-ethylbutoxy, 2-ethylbutoxy, 1,1,2-trimethylpropoxy, 1,2,2-trimethylpropoxy, 1-ethyl-1-methylpropoxy or 1-ethyl-2-methylpropoxy;
- C₁-C₄-haloalkoxy: a C₁-C₄-alkoxy radical as mentioned above which is partially or fully substituted by fluorine, chlorine, bromine and/or iodine, i.e., for example, fluoromethoxy, difluoromethoxy, trifluoromethoxy, chlorodifluoromethoxy, bromodifluoromethoxy, 2-fluoroethoxy, 2-chloroethoxy, 2-bromoethoxy, 2-iodoethoxy, 2,2-difluoroethoxy, 2,2,2-trifluoroethoxy, 2-chloro-2-fluoroethoxy, 2-chloro-2,2-difluoroethoxy, 2,2-dichloro-2-fluoroethoxy, 2,2,2-trichloroethoxy, pentafluoroethoxy, 2-fluoropropoxy, 3-fluoropropoxy, 2-chloropropoxy, 3-chloropropoxy, 2-bromopropoxy, 3-bromopropoxy, 2,2-difluoropropoxy, 2,3-difluoropropoxy, 2,3-dichloropropoxy, 3,3,3-trifluoropropoxy, 3,3,3-trichloropropoxy, 2,2,3,3,3-pentafluoropropoxy, heptafluoropropoxy, 1-(fluoromethyl)-2-fluoroethoxy, 1-(chloromethyl)-2-chloroethoxy, 1-(bromomethyl)-2-bromoethoxy, 4-fluorobutoxy, 4-chlorobutoxy, 4-bromobutoxy or nonafluorobutoxy;

- C₁-C₆-haloalkoxy: C₁-C₄-haloalkoxy as mentioned above, and also, for example, 5-fluoropentoxy, 5-chloropentoxy, 5-bromopentoxy, 5-iodopentoxy, undecafluoropentoxy, 6-fluorohexoxy, 6-chlorohexoxy, 6-bromohexoxy, 6-iodohexoxy or dodecafluorohexoxy;
- C₁-C₄-alkylthio: for example methylthio, ethylthio, propylthio, 1-methylethylthio, butylthio, 1-methylpropylthio 2-methylpropylthio or 1,1-dimethylethylthio;
- C₁-C₆-alkylthio, and the alkylthio moieties of C₁-C₆-alkylthiocarbonyl: C₁-C₄-alkylthio as mentioned above and also, for example, pentylthio, 1-methylbutylthio, 2-methylbutylthio, 3-methylbutylthio, 2,2-dimethylpropylthio, 1-ethylpropylthio, hexylthio, 1,1-dimethylpropylthio, 1,2-dimethylpropylthio, 1-methylpentylthio, 2-methylpentylthio, 3-methylpentylthio, 4-methylpentylthio, 1,1-dimethylbutylthio, 1,2-dimethylbutylthio, 1,3-dimethylbutylthio, 2,2-dimethylbutylthio, 2,3-dimethylbutylthio, 3,3-dimethylbutylthio, 1-ethylbutylthio, 2-ethylbutylthio, 1,1,2-trimethylpropylthio, 1,2,2-trimethylpropylthio, 1-ethyl-1-methylpropylthio or 1-ethyl-2-methylpropylthio;
- C₁-C₆-haloalkylthio: a C₁-C₆-alkylthio radical as mentioned above which is partially or fully substituted by fluorine, chlorine, bromine and/or iodine, i.e., for example, fluoromethylthio, difluoromethylthio, trifluoromethylthio, chlorodifluoromethylthio, bromodifluoromethylthio, 2-fluoroethylthio, 2-chloroethylthio, 2-bromoethylthio, 2-iodoethylthio, 2,2-difluoroethylthio, 2,2,2-trifluoroethylthio, 2,2,2-trichloroethylthio, 2-chloro-2-fluoroethylthio, 2-chloro-2,2-difluoroethylthio, 2,2-dichloro-2-fluoroethylthio, pentafluoroethylthio, 2-fluoropropylthio, 3-fluoropropylthio, 2-chloropropylthio, 3-chloropropylthio, 2-bromopropylthio, 3-bromopropylthio, 2,2-difluoropropylthio, 2,3-difluoropropylthio, 2,3-dichloropropylthio, 3,3,3-trifluoropropylthio, 3,3,3-trichloropropylthio, 2,2,3,3,3-pentafluoropropylthio, heptafluoropropylthio, 1-(fluoromethyl)-2-fluoroethylthio, 1-(chloromethyl)-2-chloroethylthio, 1-(bromomethyl)-2-bromoethylthio, 4-fluorobutylthio, 4-chlorobutylthio, 4-bromobutylthio, nonafluorobutylthio, 5-fluoropentylthio, 5-chloropentylthio, 5-bromopentylthio, 5-iodopentylthio, undecafluoropentylthio, 6-fluorohexylthio,

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6-chlorohexylthio, 6-bromohexylthio, 6-iodohexylthio or dodecafluorohexylthio;

- C₁-C₆-alkylsulfinyl (C₁-C₆-alkyl-S(=O)-): for example
- 5 methylsulfinyl, ethylsulfinyl, propylsulfinyl,
1-methylethylsulfinyl, butylsulfinyl, 1-methylpropylsulfinyl,
2-methylpropylsulfinyl, 1,1-dimethylethylsulfinyl,
pentylsulfinyl, 1-methylbutylsulfinyl, 2-methylbutylsulfinyl,
3-methylbutylsulfinyl, 2,2-dimethylpropylsulfinyl,
- 10 1-ethylpropylsulfinyl, 1,1-dimethylpropylsulfinyl,
1,2-dimethylpropylsulfinyl, hexylsulfinyl,
1-methylpentylsulfinyl, 2-methylpentylsulfinyl,
3-methylpentylsulfinyl, 4-methylpentylsulfinyl,
- 15 1,1-dimethylbutylsulfinyl, 1,2-dimethylbutylsulfinyl,
1,3-dimethylbutylsulfinyl, 2,2-dimethylbutylsulfinyl,
2,3-dimethylbutylsulfinyl, 3,3-dimethylbutylsulfinyl,
1-ethylbutylsulfinyl, 2-ethylbutylsulfinyl,
1,1,2-trimethylpropylsulfinyl, 1,2,2-trimethylpropylsulfinyl,
1-ethyl-1-methylpropylsulfinyl or
- 20 1-ethyl-2-methylpropylsulfinyl;
- C₁-C₆-haloalkylsulfinyl: a C₁-C₆-alkylsulfinyl radical as mentioned above which is partially or fully substituted by fluorine, chlorine, bromine and/or iodine, i.e., for example,
- 25 fluoromethylsulfinyl, difluoromethylsulfinyl,
trifluoromethylsulfinyl, chlorodifluoromethylsulfinyl,
bromodifluoromethylsulfinyl, 2-fluoroethylsulfinyl,
2-chloroethylsulfinyl, 2-bromoethylsulfinyl,
2-iodoethylsulfinyl, 2,2-difluoroethylsulfinyl,
- 30 2,2,2-trifluoroethylsulfinyl, 2,2,2-trichloroethylsulfinyl,
2-chloro-2-fluoroethylsulfinyl,
2-chloro-2,2-difluoroethylsulfinyl,
2,2-dichloro-2-fluoroethylsulfinyl, pentafluoroethylsulfinyl,
2-fluoropropylsulfinyl, 3-fluoropropylsulfinyl,
- 35 2-chloropropylsulfinyl, 3-chloropropylsulfinyl,
2-bromopropylsulfinyl, 3-bromopropylsulfinyl,
2,2-difluoropropylsulfinyl, 2,3-difluoropropylsulfinyl,
2,3-dichloropropylsulfinyl, 3,3,3-trifluoropropylsulfinyl,
3,3,3-trichloropropylsulfinyl,
- 40 2,2,3,3,3-pentafluoropropylsulfinyl,
heptafluoropropylsulfinyl,
1-(fluoromethyl)-2-fluoroethylsulfinyl,
1-(chloromethyl)-2-chloroethylsulfinyl,
1-(bromomethyl)-2-bromoethylsulfinyl, 4-fluorobutylsulfinyl,
- 45 4-chlorobutylsulfinyl, 4-bromobutylsulfinyl,
nonafluorobutylsulfinyl, 5-fluoropentylsulfinyl,
5-chloropentylsulfinyl, 5-bromopentylsulfinyl,

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5-iodopentylsulfinyl, undecafluoropentylsulfinyl,
6-fluorohexylsulfinyl, 6-chlorohexylsulfinyl,
6-bromohexylsulfinyl, 6-iodohexylsulfinyl or
dodecafluorohexylsulfinyl;

- 5
- C₁-C₆-alkylsulfonyl (C₁-C₆-alkyl-S(=O)₂-), and the
alkylsulfonyl radicals of N-(C₁-C₆-alkylsulfonyl)amino and
N-(C₁-C₆-alkyl)-N-(C₁-C₆-alkylsulfonyl)amino: for example
methylsulfonyl, ethylsulfonyl, propylsulfonyl,
10 1-methylethylsulfonyl, butylsulfonyl, 1-methylpropylsulfonyl,
2-methylpropylsulfonyl, 1,1-dimethylethylsulfonyl,
pentylsulfonyl, 1-methylbutylsulfonyl, 2-methylbutylsulfonyl,
3-methylbutylsulfonyl, 1,1-dimethylpropylsulfonyl,
1,2-dimethylpropylsulfonyl, 2,2-dimethylpropylsulfonyl,
15 1-ethylpropylsulfonyl, hexylsulfonyl, 1-methylpentylsulfonyl,
2-methylpentylsulfonyl, 3-methylpentylsulfonyl,
4-methylpentylsulfonyl, 1,1-dimethylbutylsulfonyl,
1,2-dimethylbutylsulfonyl, 1,3-dimethylbutylsulfonyl,
2,2-dimethylbutylsulfonyl, 2,3-dimethylbutylsulfonyl,
20 3,3-dimethylbutylsulfonyl, 1-ethylbutylsulfonyl,
2-ethylbutylsulfonyl, 1,1,2-trimethylpropylsulfonyl,
1,2,2-trimethylpropylsulfonyl, 1-ethyl-1-methylpropylsulfonyl
or 1-ethyl-2-methylpropylsulfonyl;
- 25 - C₁-C₆-haloalkylsulfonyl, and the haloalkylsulfonyl radicals of
N-(C₁-C₆-haloalkylsulfonyl)amino and
N-(C₁-C₆-alkyl)-N-(C₁-C₆-haloalkylsulfonyl)amino: a
C₁-C₆-alkylsulfonyl radical as mentioned above which is
partially or fully substituted by fluorine, chlorine, bromine
30 and/or iodine, i.e., for example, fluoromethylsulfonyl,
difluoromethylsulfonyl, trifluoromethylsulfonyl,
chlorodifluoromethylsulfonyl, bromodifluoromethylsulfonyl,
2-fluoroethylsulfonyl, 2-chloroethylsulfonyl,
2-bromoethylsulfonyl, 2-iodoethylsulfonyl,
35 2,2-difluoroethylsulfonyl, 2,2,2-trifluoroethylsulfonyl,
2-chloro-2-fluoroethylsulfonyl,
2-chloro-2,2-difluoroethylsulfonyl,
2,2-dichloro-2-fluoroethylsulfonyl,
2,2,2-trichloroethylsulfonyl, pentafluoroethylsulfonyl,
40 2-fluoropropylsulfonyl, 3-fluoropropylsulfonyl,
2-chloropropylsulfonyl, 3-chloropropylsulfonyl,
2-bromopropylsulfonyl, 3-bromopropylsulfonyl,
2,2-difluoropropylsulfonyl, 2,3-difluoropropylsulfonyl,
2,3-dichloropropylsulfonyl, 3,3,3-trifluoropropylsulfonyl,
45 3,3,3-trichloropropylsulfonyl,
2,2,3,3,3-pentafluoropropylsulfonyl,
heptafluoropropylsulfonyl,

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- 1-(fluoromethyl)-2-fluoroethylsulfonyl,
1-(chloromethyl)-2-chloroethylsulfonyl,
1-(bromomethyl)-2-bromoethylsulfonyl, 4-fluorobutylsulfonyl,
4-chlorobutylsulfonyl, 4-bromobutylsulfonyl,
5 nonafluorobutylsulfonyl, 5-fluoropentylsulfonyl,
5-chloropentylsulfonyl, 5-bromopentylsulfonyl,
5-iodopentylsulfonyl, 6-fluorohexylsulfonyl,
6-bromohexylsulfonyl, 6-iodohexylsulfonyl or
dodecafluorohexylsulfonyl;
- 10 - C₁-C₆-alkylamino, and the alkylamino radicals of
N-(C₁-C₆-alkylamino)imino-C₁-C₆-alkyl: for example
methylamino, ethylamino, propylamino, 1-methylethylamino,
butylamino, 1-methylpropylamino, 2-methylpropylamino,
15 1,1-dimethylethylamino, pentylamino, 1-methylbutylamino,
2-methylbutylamino, 3-methylbutylamino,
2,2-dimethylpropylamino, 1-ethylpropylamino, hexylamino,
1,1-dimethylpropylamino, 1,2-dimethylpropylamino,
1-methylpentylamino, 2-methylpentylamino,
20 3-methylpentylamino, 4-methylpentylamino,
1,1-dimethylbutylamino, 1,2-dimethylbutylamino,
1,3-dimethylbutylamino, 2,2-dimethylbutylamino,
2,3-dimethylbutylamino, 3,3-dimethylbutylamino,
1-ethylbutylamino, 2-ethylbutylamino,
25 1,1,2-trimethylpropylamino, 1,2,2-trimethylpropylamino,
1-ethyl-1-methylpropylamino or 1-ethyl-2-methylpropylamino;
- (C₁-C₆-alkylamino)sulfonyl: for example methylaminosulfonyl,
ethylaminosulfonyl, propylaminosulfonyl,
30 1-methylethylaminosulfonyl, butylaminosulfonyl,
1-methylpropylaminosulfonyl, 2-methylpropylaminosulfonyl,
1,1-dimethylethylaminosulfonyl, pentylaminosulfonyl,
1-methylbutylaminosulfonyl, 2-methylbutylaminosulfonyl,
3-methylbutylaminosulfonyl, 2,2-dimethylpropylaminosulfonyl,
35 1-ethylpropylaminosulfonyl, hexylaminosulfonyl,
1,1-dimethylpropylaminosulfonyl,
1,2-dimethylpropylaminosulfonyl, 1-methylpentylaminosulfonyl,
2-methylpentylaminosulfonyl, 3-methylpentylaminosulfonyl,
4-methylpentylaminosulfonyl, 1,1-dimethylbutylaminosulfonyl,
40 1,2-dimethylbutylaminosulfonyl,
1,3-dimethylbutylaminosulfonyl,
2,2-dimethylbutylaminosulfonyl,
2,3-dimethylbutylaminosulfonyl,
3,3-dimethylbutylaminosulfonyl, 1-ethylbutylaminosulfonyl,
45 2-ethylbutylaminosulfonyl,
1,1,2-trimethylpropylaminosulfonyl,
1,2,2-trimethylpropylaminosulfonyl,

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1-ethyl-1-methylpropylaminosulfonyl or
1-ethyl-2-methylpropylaminosulfonyl;

- di(C₁-C₆-alkyl)aminosulfonyl: for example
- 5 N,N-dimethylaminosulfonyl, N,N-diethylaminosulfonyl,
N,N-di(1-methylethyl)aminosulfonyl,
N,N-dipropylaminosulfonyl, N,N-dibutylaminosulfonyl,
N,N-di(1-methylpropyl)aminosulfonyl,
N,N-di(2-methylpropyl)aminosulfonyl,
- 10 N,N-di(1,1-dimethylethyl)aminosulfonyl,
N-ethyl-N-methylaminosulfonyl,
N-methyl-N-propylaminosulfonyl,
N-methyl-N-(1-methylethyl)aminosulfonyl,
N-butyl-N-methylaminosulfonyl,
- 15 N-methyl-N-(1-methylpropyl)aminosulfonyl,
N-methyl-N-(2-methylpropyl)aminosulfonyl,
N-(1,1-dimethylethyl)-N-methylaminosulfonyl,
N-ethyl-N-propylaminosulfonyl,
N-ethyl-N-(1-methylethyl)aminosulfonyl,
- 20 N-butyl-N-ethylaminosulfonyl,
N-ethyl-N-(1-methylpropyl)aminosulfonyl,
N-ethyl-N-(2-methylpropyl)aminosulfonyl,
N-ethyl-N-(1,1-dimethylethyl)aminosulfonyl,
N-(1-methylethyl)-N-propylaminosulfonyl,
- 25 N-butyl-N-propylaminosulfonyl,
N-(1-methylpropyl)-N-propylaminosulfonyl,
N-(2-methylpropyl)-N-propylaminosulfonyl,
N-(1,1-dimethylethyl)-N-propylaminosulfonyl,
N-butyl-N-(1-methylethyl)aminosulfonyl,
- 30 N-(1-methylethyl)-N-(1-methylpropyl)aminosulfonyl,
N-(1-methylethyl)-N-(2-methylpropyl)aminosulfonyl,
N-(1,1-dimethylethyl)-N-(1-methylethyl)aminosulfonyl,
N-butyl-N-(1-methylpropyl)aminosulfonyl,
N-butyl-N-(2-methylpropyl)aminosulfonyl,
- 35 N-butyl-N-(1,1-dimethylethyl)aminosulfonyl,
N-(1-methylpropyl)-N-(2-methylpropyl)aminosulfonyl,
N-(1,1-dimethylethyl)-N-(1-methylpropyl)aminosulfonyl,
N-(1,1-dimethylethyl)-N-(2-methylpropyl)aminosulfonyl,
N-methyl-N-pentylaminosulfonyl,
- 40 N-methyl-N-(1-methylbutyl)aminosulfonyl,
N-methyl-N-(2-methylbutyl)aminosulfonyl,
N-methyl-N-(3-methylbutyl)aminosulfonyl,
N-methyl-N-(2,2-dimethylpropyl)aminosulfonyl,
N-methyl-N-(1-ethylpropyl)aminosulfonyl,
- 45 N-methyl-N-hexylaminosulfonyl,
N-methyl-N-(1,1-dimethylpropyl)aminosulfonyl,
N-methyl-N-(1,2-dimethylpropyl)aminosulfonyl,

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- N-methyl-N-(1-methylpentyl)aminosulfonyl,
N-methyl-N-(2-methylpentyl)aminosulfonyl,
N-methyl-N-(3-methylpentyl)aminosulfonyl,
N-methyl-N-(4-methylpentyl)aminosulfonyl,
5 N-methyl-N-(1,1-dimethylbutyl)aminosulfonyl,
N-methyl-N-(1,2-dimethylbutyl)aminosulfonyl,
N-methyl-N-(1,3-dimethylbutyl)aminosulfonyl,
N-methyl-N-(2,2-dimethylbutyl)aminosulfonyl,
N-methyl-N-(2,3-dimethylbutyl)aminosulfonyl,
10 N-methyl-N-(3,3-dimethylbutyl)aminosulfonyl,
N-methyl-N-(1-ethylbutyl)aminosulfonyl,
N-methyl-N-(2-ethylbutyl)aminosulfonyl,
N-methyl-N-(1,1,2-trimethylpropyl)aminosulfonyl,
N-methyl-N-(1,2,2-trimethylpropyl)aminosulfonyl,
15 N-methyl-N-(1-ethyl-1-methylpropyl)aminosulfonyl,
N-methyl-N-(1-ethyl-2-methylpropyl)aminosulfonyl,
N-ethyl-N-pentylaminosulfonyl,
N-ethyl-N-(1-methylbutyl)aminosulfonyl,
N-ethyl-N-(2-methylbutyl)aminosulfonyl,
20 N-ethyl-N-(3-methylbutyl)aminosulfonyl,
N-ethyl-N-(2,2-dimethylpropyl)aminosulfonyl,
N-ethyl-N-(1-ethylpropyl)aminosulfonyl,
N-ethyl-N-hexylaminosulfonyl,
N-ethyl-N-(1,1-dimethylpropyl)aminosulfonyl,
25 N-ethyl-N-(1,2-dimethylpropyl)aminosulfonyl,
N-ethyl-N-(1-methylpentyl)aminosulfonyl,
N-ethyl-N-(2-methylpentyl)aminosulfonyl,
N-ethyl-N-(3-methylpentyl)aminosulfonyl,
N-ethyl-N-(4-methylpentyl)aminosulfonyl,
30 N-ethyl-N-(1,1-dimethylbutyl)aminosulfonyl,
N-ethyl-N-(1,2-dimethylbutyl)aminosulfonyl,
N-ethyl-N-(1,3-dimethylbutyl)aminosulfonyl,
N-ethyl-N-(2,2-dimethylbutyl)aminosulfonyl,
N-ethyl-N-(2,3-dimethylbutyl)aminosulfonyl,
35 N-ethyl-N-(3,3-dimethylbutyl)aminosulfonyl,
N-ethyl-N-(1-ethylbutyl)aminosulfonyl,
N-ethyl-N-(2-ethylbutyl)aminosulfonyl,
N-ethyl-N-(1,1,2-trimethylpropyl)aminosulfonyl,
N-ethyl-N-(1,2,2-trimethylpropyl)aminosulfonyl,
40 N-ethyl-N-(1-ethyl-1-methylpropyl)aminosulfonyl,
N-ethyl-N-(1-ethyl-2-methylpropyl)aminosulfonyl,
N-propyl-N-pentylaminosulfonyl,
N-butyl-N-pentylaminosulfonyl, N,N-dipentylaminosulfonyl,
N-propyl-N-hexylaminosulfonyl, N-butyl-N-hexylaminosulfonyl,
45 N-pentyl-N-hexylaminosulfonyl or N,N-dihexylaminosulfonyl;

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- di(C₁-C₄-alkyl)amino, and the dialkylamino radicals of di(C₁-C₄-alkyl)amino-C₁-C₄-alkoxycarbonyl and N-(di-C₁-C₄-alkylamino)imino-C₁-C₆-alkyl: for example N,N-dimethylamino, N,N-diethylamino, N,N-dipropylamino, 5 N,N-di(1-methylethyl)amino, N,N-dibutylamino, N,N-di(1-methylpropyl)amino, N,N-di(2-methylpropyl)amino, N,N-di(1,1-dimethylethyl)amino, N-ethyl-N-methylamino, N-methyl-N-propylamino, N-methyl-N-(1-methylethyl)amino, N-butyl-N-methylamino, N-methyl-N-(1-methylpropyl)amino, 10 N-methyl-N-(2-methylpropyl)amino, N-(1,1-dimethylethyl)-N-methylamino, N-ethyl-N-propylamino, N-ethyl-N-(1-methylethyl)amino, N-butyl-N-ethylamino, N-ethyl-N-(1-methylpropyl)amino, N-ethyl-N-(2-methylpropyl)amino, 15 N-ethyl-N-(1,1-dimethylethyl)amino, N-(1-methylethyl)-N-propylamino, N-butyl-N-propylamino, N-(1-methylpropyl)-N-propylamino, N-(2-methylpropyl)-N-propylamino, N-(1,1-dimethylethyl)-N-propylamino, 20 N-butyl-N-(1-methylethyl)amino, N-(1-methylethyl)-N-(1-methylpropyl)amino, N-(1-methylethyl)-N-(2-methylpropyl)amino, N-(1,1-dimethylethyl)-N-(1-methylethyl)amino, N-butyl-N-(1-methylpropyl)amino, 25 N-butyl-N-(2-methylpropyl)amino, N-butyl-N-(1,1-dimethylethyl)amino, N-(1-methylpropyl)-N-(2-methylpropyl)amino, N-(1,1-dimethylethyl)-N-(1-methylpropyl)amino or N-(1,1-dimethylethyl)-N-(2-methylpropyl)amino; 30
- di(C₁-C₆-alkyl)amino, and the dialkylamino radicals of di(C₁-C₆-alkyl)aminoimino-C₁-C₆-alkyl: di(C₁-C₄-alkyl)amino as mentioned above, and also N,N-dipentylamino, N,N-dihexylamino, N-methyl-N-pentylamino, 35 N-ethyl-N-pentylamino, N-methyl-N-hexylamino or N-ethyl-N-hexylamino;
- C₁-C₄-alkylcarbonyl: for example methylcarbonyl, ethylcarbonyl, propylcarbonyl, 1-methylethylcarbonyl, 40 butylcarbonyl, 1-methylpropylcarbonyl, 2-methylpropylcarbonyl or 1,1-dimethylethylcarbonyl;
- C₁-C₆-alkylcarbonyl, and the alkylcarbonyl radicals of C₁-C₆-alkylcarbonyl-C₁-C₆-alkyl: C₁-C₄-alkylcarbonyl as mentioned above, and also, for example, pentylcarbonyl, 45 1-methylbutylcarbonyl, 2-methylbutylcarbonyl, 3-methylbutylcarbonyl, 2,2-dimethylpropylcarbonyl,

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- 1-ethylpropylcarbonyl, hexylcarbonyl,
1,1-dimethylpropylcarbonyl, 1,2-dimethylpropylcarbonyl,
1-methylpentylcarbonyl, 2-methylpentylcarbonyl,
3-methylpentylcarbonyl, 4-methylpentylcarbonyl,
5 1,1-dimethylbutylcarbonyl, 1,2-dimethylbutylcarbonyl,
1,3-dimethylbutylcarbonyl, 2,2-dimethylbutylcarbonyl,
2,3-dimethylbutylcarbonyl, 3,3-dimethylbutylcarbonyl,
1-ethylbutylcarbonyl, 2-ethylbutylcarbonyl,
1,1,2-trimethylpropylcarbonyl, 1,2,2-trimethylpropylcarbonyl,
10 1-ethyl-1-methylpropylcarbonyl or
1-ethyl-2-methylpropylcarbonyl;
- C₁-C₂₀-alkylcarbonyl: C₁-C₆-alkylcarbonyl as mentioned above,
and also heptylcarbonyl, octylcarbonyl, pentadecylcarbonyl or
15 heptadecylcarbonyl;
- C₁-C₄-alkoxycarbonyl, and the alkoxycarbonyl moieties of
di(C₁-C₄-alkyl)amino-C₁-C₄-alkoxycarbonyl: for example
methoxycarbonyl, ethoxycarbonyl, propoxycarbonyl,
20 1-methylethoxycarbonyl, butoxycarbonyl,
1-methylpropoxycarbonyl, 2-methylpropoxycarbonyl or
1,1-dimethylethoxycarbonyl;
- (C₁-C₆-alkoxy)carbonyl: (C₁-C₄-alkoxy)carbonyl as mentioned
25 above, and also, for example, pentoxycarbonyl,
1-methylbutoxycarbonyl, 2-methylbutoxycarbonyl,
3-methylbutoxycarbonyl, 2,2-dimethylpropoxycarbonyl,
1-ethylpropoxycarbonyl, hexoxycarbonyl,
1,1-dimethylpropoxycarbonyl, 1,2-dimethylpropoxycarbonyl,
30 1-methylpentoxycarbonyl, 2-methylpentoxycarbonyl,
3-methylpentoxycarbonyl, 4-methylpentoxycarbonyl,
1,1-dimethylbutoxycarbonyl, 1,2-dimethylbutoxycarbonyl,
1,3-dimethylbutoxycarbonyl, 2,2-dimethylbutoxycarbonyl,
2,3-dimethylbutoxycarbonyl, 3,3-dimethylbutoxycarbonyl,
35 1-ethylbutoxycarbonyl, 2-ethylbutoxycarbonyl,
1,1,2-trimethylpropoxycarbonyl,
1,2,2-trimethylpropoxycarbonyl,
1-ethyl-1-methyl-propoxycarbonyl or
1-ethyl-2-methyl-propoxycarbonyl;
40
- C₁-C₆-haloalkoxycarbonyl: a C₁-C₆-alkoxycarbonyl radical as
mentioned above which is partially or fully substituted by
fluorine, chlorine, bromine and/or iodine, i.e., for example,
fluoromethoxycarbonyl, difluoromethoxycarbonyl,
45 trifluoromethoxycarbonyl, chlorodifluoromethoxycarbonyl,
bromodifluoromethoxycarbonyl, 2-fluoroethoxycarbonyl,
2-chloroethoxycarbonyl, 2-bromoethoxycarbonyl,

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- 2-iodoethoxycarbonyl, 2,2-difluoroethoxycarbonyl,
2,2,2-trifluoroethoxycarbonyl,
2-chloro-2-fluoroethoxycarbonyl,
2-chloro-2,2-difluoroethoxycarbonyl,
5 2,2-dichloro-2-fluoroethoxycarbonyl,
2,2,2-trichloroethoxycarbonyl, pentafluoroethoxycarbonyl,
2-fluoropropoxycarbonyl, 3-fluoropropoxycarbonyl,
2-chloropropoxycarbonyl, 3-chloropropoxycarbonyl,
2-bromopropoxycarbonyl, 3-bromopropoxycarbonyl,
10 2,2-difluoropropoxycarbonyl, 2,3-difluoropropoxycarbonyl,
2,3-dichloropropoxycarbonyl, 3,3,3-trifluoropropoxycarbonyl,
3,3,3-trichloropropoxycarbonyl,
2,2,3,3,3-pentafluoropropoxycarbonyl,
heptafluoropropoxycarbonyl,
15 1-(fluoromethyl)-2-fluoroethoxycarbonyl,
1-(chloromethyl)-2-chloroethoxycarbonyl,
1-(bromomethyl)-2-bromoethoxycarbonyl,
4-fluorobutoxycarbonyl, 4-chlorobutoxycarbonyl,
4-bromobutoxycarbonyl, nonafluorobutoxycarbonyl,
20 5-fluoropentoxycarbonyl, 5-chloropentoxycarbonyl,
5-bromopentoxycarbonyl, 5-iodopentoxycarbonyl,
6-fluorohexoxycarbonyl, 6-bromohexoxycarbonyl,
6-iodohexoxycarbonyl or dodecafluorohexoxycarbonyl;
- 25 - (C₁-C₄-alkyl)carbonyloxy: acetyloxy, ethylcarbonyloxy,
propylcarbonyloxy, 1-methylethylcarbonyloxy,
butylcarbonyloxy, 1-methylpropylcarbonyloxy,
2-methylpropylcarbonyloxy or 1,1-dimethylethylcarbonyloxy;
- 30 - (C₁-C₄-alkylamino)carbonyl: for example methylaminocarbonyl,
ethylaminocarbonyl, propylaminocarbonyl,
1-methylethylaminocarbonyl, butylaminocarbonyl,
1-methylpropylaminocarbonyl, 2-methylpropylaminocarbonyl or
1,1-dimethylethylaminocarbonyl;
- 35 - (C₁-C₆-alkylamino)carbonyl: (C₁-C₄-alkylamino)carbonyl as
mentioned above, and also, for example, pentylaminocarbonyl,
1-methylbutylaminocarbonyl, 2-methylbutylaminocarbonyl,
3-methylbutylaminocarbonyl, 2,2-dimethylpropylaminocarbonyl,
40 1-ethylpropylaminocarbonyl, hexylaminocarbonyl,
1,1-dimethylpropylaminocarbonyl,
1,2-dimethylpropylaminocarbonyl, 1-methylpentylaminocarbonyl,
2-methylpentylaminocarbonyl, 3-methylpentylaminocarbonyl,
4-methylpentylaminocarbonyl, 1,1-dimethylbutylaminocarbonyl,
45 1,2-dimethylbutylaminocarbonyl,
1,3-dimethylbutylaminocarbonyl,
2,2-dimethylbutylaminocarbonyl,

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- 2,3-dimethylbutylaminocarbonyl,
3,3-dimethylbutylaminocarbonyl, 1-ethylbutylaminocarbonyl,
2-ethylbutylaminocarbonyl,
1,1,2-trimethylpropylaminocarbonyl,
5 1,2,2-trimethylpropylaminocarbonyl,
1-ethyl-1-methylpropylaminocarbonyl or
1-ethyl-2-methylpropylaminocarbonyl;
- di(C₁-C₄-alkyl)aminocarbonyl: for example
10 N,N-dimethylaminocarbonyl, N,N-diethylaminocarbonyl,
N,N-di(1-methylethyl)aminocarbonyl,
N,N-dipropylaminocarbonyl, N,N-dibutylaminocarbonyl,
N,N-di(1-methylpropyl)aminocarbonyl,
N,N-di(2-methylpropyl)aminocarbonyl,
15 N,N-di(1,1-dimethylethyl)aminocarbonyl,
N-ethyl-N-methylaminocarbonyl,
N-methyl-N-propylaminocarbonyl,
N-methyl-N-(1-methylethyl)aminocarbonyl,
N-butyl-N-methylaminocarbonyl,
20 N-methyl-N-(1-methylpropyl)aminocarbonyl,
N-methyl-N-(2-methylpropyl)aminocarbonyl,
N-(1,1-dimethylethyl)-N-methylaminocarbonyl,
N-ethyl-N-propylaminocarbonyl,
N-ethyl-N-(1-methylethyl)aminocarbonyl,
25 N-butyl-N-ethylaminocarbonyl,
N-ethyl-N-(1-methylpropyl)aminocarbonyl,
N-ethyl-N-(2-methylpropyl)aminocarbonyl,
N-ethyl-N-(1,1-dimethylethyl)aminocarbonyl,
N-(1-methylethyl)-N-propylaminocarbonyl,
30 N-butyl-N-propylaminocarbonyl,
N-(1-methylpropyl)-N-propylaminocarbonyl,
N-(2-methylpropyl)-N-propylaminocarbonyl,
N-(1,1-dimethylethyl)-N-propylaminocarbonyl,
N-butyl-N-(1-methylethyl)aminocarbonyl,
35 N-(1-methylethyl)-N-(1-methylpropyl)aminocarbonyl,
N-(1-methylethyl)-N-(2-methylpropyl)aminocarbonyl,
N-(1,1-dimethylethyl)-N-(1-methylethyl)aminocarbonyl,
N-butyl-N-(1-methylpropyl)aminocarbonyl,
N-butyl-N-(2-methylpropyl)aminocarbonyl,
40 N-butyl-N-(1,1-dimethylethyl)aminocarbonyl,
N-(1-methylpropyl)-N-(2-methylpropyl)aminocarbonyl,
N-(1,1-dimethylethyl)-N-(1-methylpropyl)aminocarbonyl or
N-(1,1-dimethylethyl)-N-(2-methylpropyl)aminocarbonyl;
- 45 - di(C₁-C₆-alkyl)aminocarbonyl: di(C₁-C₄-alkyl)aminocarbonyl as
mentioned above, and also, for example,
N-methyl-N-pentylaminocarbonyl,

20

- N-methyl-N-(1-methylbutyl)aminocarbonyl,
N-Methyl-N-(2-methylbutyl)aminocarbonyl,
N-methyl-N-(3-methylbutyl)aminocarbonyl,
N-methyl-N-(2,2-dimethylpropyl)aminocarbonyl,
5 N-methyl-N-(1-ethylpropyl)aminocarbonyl,
N-methyl-N-hexylaminocarbonyl,
N-methyl-N-(1,1-dimethylpropyl)aminocarbonyl,
N-methyl-N-(1,2-dimethylpropyl)aminocarbonyl,
N-methyl-N-(1-methylpentyl)aminocarbonyl,
10 N-methyl-N-(2-methylpentyl)aminocarbonyl,
N-methyl-N-(3-methylpentyl)aminocarbonyl,
N-methyl-N-(4-methylpentyl)aminocarbonyl,
N-methyl-N-(1,1-dimethylbutyl)aminocarbonyl,
N-methyl-N-(1,2-dimethylbutyl)aminocarbonyl,
15 N-methyl-N-(1,3-dimethylbutyl)aminocarbonyl,
N-methyl-N-(2,2-dimethylbutyl)aminocarbonyl,
N-methyl-N-(2,3-dimethylbutyl)aminocarbonyl,
N-methyl-N-(3,3-dimethylbutyl)aminocarbonyl,
N-methyl-N-(1-ethylbutyl)aminocarbonyl,
20 N-methyl-N-(2-ethylbutyl)aminocarbonyl,
N-methyl-N-(1,1,2-trimethylpropyl)aminocarbonyl,
N-methyl-N-(1,2,2-trimethylpropyl)aminocarbonyl,
N-methyl-N-(1-ethyl-1-methylpropyl)aminocarbonyl,
N-methyl-N-(1-ethyl-2-methylpropyl)aminocarbonyl,
25 N-ethyl-N-pentylaminocarbonyl,
N-ethyl-N-(1-methylbutyl)aminocarbonyl,
N-ethyl-N-(2-methylbutyl)aminocarbonyl,
N-ethyl-N-(3-methylbutyl)aminocarbonyl,
N-ethyl-N-(2,2-dimethylpropyl)aminocarbonyl,
30 N-ethyl-N-(1-ethylpropyl)aminocarbonyl,
N-ethyl-N-hexylaminocarbonyl,
N-ethyl-N-(1,1-dimethylpropyl)aminocarbonyl,
N-ethyl-N-(1,2-dimethylpropyl)aminocarbonyl,
N-ethyl-N-(1-methylpentyl)aminocarbonyl,
35 N-ethyl-N-(2-methylpentyl)aminocarbonyl,
N-ethyl-N-(3-methylpentyl)aminocarbonyl,
N-ethyl-N-(4-methylpentyl)aminocarbonyl,
N-ethyl-N-(1,1-dimethylbutyl)aminocarbonyl,
N-ethyl-N-(1,2-dimethylbutyl)aminocarbonyl,
40 N-ethyl-N-(1,3-dimethylbutyl)aminocarbonyl,
N-ethyl-N-(2,2-dimethylbutyl)aminocarbonyl,
N-ethyl-N-(2,3-dimethylbutyl)aminocarbonyl,
N-ethyl-N-(3,3-dimethylbutyl)aminocarbonyl,
N-ethyl-N-(1-ethylbutyl)aminocarbonyl,
45 N-ethyl-N-(2-ethylbutyl)aminocarbonyl,
N-ethyl-N-(1,1,2-trimethylpropyl)aminocarbonyl,
N-ethyl-N-(1,2,2-trimethylpropyl)aminocarbonyl,

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- N-ethyl-N-(1-ethyl-1-methylpropyl)aminocarbonyl,
N-ethyl-N-(1-ethyl-2-methylpropyl)aminocarbonyl,
N-propyl-N-pentylaminocarbonyl,
N-butyl-N-pentylaminocarbonyl, N,N-dipentylaminocarbonyl,
5 N-propyl-N-hexylaminocarbonyl, N-butyl-N-hexylaminocarbonyl,
N-pentyl-N-hexylaminocarbonyl or N,N-dihexylaminocarbonyl;
- di(C₁-C₆-alkyl)aminothiocarbonyl: for example
N,N-dimethylaminothiocarbonyl, N,N-diethylaminothiocarbonyl,
10 N,N-di(1-methylethyl)aminothiocarbonyl,
N,N-dipropylaminothiocarbonyl, N,N-dibutylaminothiocarbonyl,
N,N-di(1-methylpropyl)aminothiocarbonyl,
N,N-di(2-methylpropyl)aminothiocarbonyl,
N,N-di(1,1-dimethylethyl)aminothiocarbonyl,
15 N-ethyl-N-methylaminothiocarbonyl,
N-methyl-N-propylaminothiocarbonyl,
N-methyl-N-(1-methylethyl)aminothiocarbonyl,
N-butyl-N-methylaminothiocarbonyl,
N-methyl-N-(1-methylpropyl)aminothiocarbonyl,
20 N-methyl-N-(2-methylpropyl)aminothiocarbonyl,
N-(1,1-dimethylethyl)-N-methylaminothiocarbonyl,
N-ethyl-N-propylaminothiocarbonyl,
N-ethyl-N-(1-methylethyl)aminothiocarbonyl,
N-butyl-N-ethylaminothiocarbonyl,
25 N-ethyl-N-(1-methylpropyl)aminothiocarbonyl,
N-ethyl-N-(2-methylpropyl)aminothiocarbonyl,
N-ethyl-N-(1,1-dimethylethyl)aminothiocarbonyl,
N-(1-methylethyl)-N-propylaminothiocarbonyl,
N-butyl-N-propylaminothiocarbonyl,
30 N-(1-methylpropyl)-N-propylaminothiocarbonyl,
N-(2-methylpropyl)-N-propylaminothiocarbonyl,
N-(1,1-dimethylethyl)-N-propylaminothiocarbonyl,
N-butyl-N-(1-methylethyl)aminothiocarbonyl,
N-(1-methylethyl)-N-(1-methylpropyl)aminothiocarbonyl,
35 N-(1-methylethyl)-N-(2-methylpropyl)aminothiocarbonyl,
N-(1,1-dimethylethyl)-N-(1-methylethyl)aminothiocarbonyl,
N-butyl-N-(1-methylpropyl)aminothiocarbonyl,
N-butyl-N-(2-methylpropyl)aminothiocarbonyl,
N-butyl-N-(1,1-dimethylethyl)aminothiocarbonyl,
40 N-(1-methylpropyl)-N-(2-methylpropyl)aminothiocarbonyl,
N-(1,1-dimethylethyl)-N-(1-methylpropyl)aminothiocarbonyl,
N-(1,1-dimethylethyl)-N-(2-methylpropyl)aminothiocarbonyl,
N-methyl-N-pentylaminothiocarbonyl,
N-methyl-N-(1-methylbutyl)aminothiocarbonyl,
45 N-methyl-N-(2-methylbutyl)aminothiocarbonyl,
N-methyl-N-(3-methylbutyl)aminothiocarbonyl,
N-methyl-N-(2,2-dimethylpropyl)aminothiocarbonyl,

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- N-methyl-N-(1-ethylpropyl)aminothiocarbonyl,
N-methyl-N-hexylaminothiocarbonyl,
N-methyl-N-(1,1-dimethylpropyl)aminothiocarbonyl,
N-methyl-N-(1,2-dimethylpropyl)aminothiocarbonyl,
5 N-methyl-N-(1-methylpentyl)aminothiocarbonyl,
N-methyl-N-(2-methylpentyl)aminothiocarbonyl,
N-methyl-N-(3-methylpentyl)aminothiocarbonyl,
N-methyl-N-(4-methylpentyl)aminothiocarbonyl,
N-methyl-N-(1,1-dimethylbutyl)aminothiocarbonyl,
10 N-methyl-N-(1,2-dimethylbutyl)aminothiocarbonyl,
N-methyl-N-(1,3-dimethylbutyl)aminothiocarbonyl,
N-methyl-N-(2,2-dimethylbutyl)aminothiocarbonyl,
N-methyl-N-(2,3-dimethylbutyl)aminothiocarbonyl,
N-methyl-N-(3,3-dimethylbutyl)aminothiocarbonyl,
15 N-methyl-N-(1-ethylbutyl)aminothiocarbonyl,
N-methyl-N-(2-ethylbutyl)aminothiocarbonyl,
N-methyl-N-ethyl-N-(1,1,2-trimethylpropyl)aminothiocarbonyl,
N-methyl-N-(1,2,2-trimethylpropyl)aminothiocarbonyl,
N-methyl-N-(1-ethyl-1-methylpropyl)aminothiocarbonyl,
20 N-methyl-N-(1-ethyl-2-methylpropyl)aminothiocarbonyl,
N-ethyl-N-pentylaminothiocarbonyl,
N-ethyl-N-(1-methylbutyl)aminothiocarbonyl,
N-ethyl-N-(2-methylbutyl)aminothiocarbonyl,
N-ethyl-N-(3-methylbutyl)aminothiocarbonyl,
25 N-ethyl-N-(2,2-dimethylpropyl)aminothiocarbonyl,
N-ethyl-N-(1-ethylpropyl)aminothiocarbonyl,
N-ethyl-N-hexylaminothiocarbonyl,
N-ethyl-N-(1,1-dimethylpropyl)aminothiocarbonyl,
N-ethyl-N-(1,2-dimethylpropyl)aminothiocarbonyl,
30 N-ethyl-N-(1-methylpentyl)aminothiocarbonyl,
N-ethyl-N-(2-methylpentyl)aminothiocarbonyl,
N-ethyl-N-(3-methylpentyl)aminothiocarbonyl,
N-ethyl-N-(4-methylpentyl)aminothiocarbonyl,
N-ethyl-N-(1,1-dimethylbutyl)aminothiocarbonyl,
35 N-ethyl-N-(1,2-dimethylbutyl)aminothiocarbonyl,
N-ethyl-N-(1,3-dimethylbutyl)aminothiocarbonyl,
N-ethyl-N-(2,2-dimethylbutyl)aminothiocarbonyl,
N-ethyl-N-(2,3-dimethylbutyl)aminothiocarbonyl,
N-ethyl-N-(3,3-dimethylbutyl)aminothiocarbonyl,
40 N-ethyl-N-(1-ethylbutyl)aminothiocarbonyl,
N-ethyl-N-(2-ethylbutyl)aminothiocarbonyl,
N-ethyl-N-(1,1,2-trimethylpropyl)aminothiocarbonyl,
N-ethyl-N-(1,2,2-trimethylpropyl)aminothiocarbonyl,
N-ethyl-N-(1-ethyl-1-methylpropyl)aminothiocarbonyl,
45 N-ethyl-N-(1-ethyl-2-methylpropyl)aminothiocarbonyl,
N-propyl-N-pentylaminothiocarbonyl,
N-butyl-N-pentylaminothiocarbonyl,

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- N,N-dipentylaminothiocarbonyl,
 N-propyl-N-hexylaminothiocarbonyl,
 N-butyl-N-hexylaminothiocarbonyl,
 N-pentyl-N-hexylaminothiocarbonyl or
 5 N,N-dihexylaminothiocarbonyl;
- C₁-C₄-alkoxy-C₁-C₄-alkyl and the alkoxyalkyl moieties of hydroxy-C₁-C₄-alkoxy-C₁-C₄-alkyl: C₁-C₄-alkyl which is substituted by C₁-C₄-alkoxy as mentioned above, i.e., for
 10 example, methoxymethyl, ethoxymethyl, propoxymethyl, (1-methylethoxy)methyl, butoxymethyl, (1-methylpropoxy)methyl, (2-methylpropoxy)methyl, (1,1-dimethylethoxy)methyl, 2-(methoxy)ethyl, 2-(ethoxy)ethyl, 2-(propoxy)ethyl, 2-(1-methylethoxy)ethyl,
 15 2-(butoxy)ethyl, 2-(1-methylpropoxy)ethyl, 2-(2-methylpropoxy)ethyl, 2-(1,1-dimethylethoxy)ethyl, 2-(methoxy)propyl, 2-(ethoxy)propyl, 2-(propoxy)propyl, 2-(1-methylethoxy)propyl, 2-(butoxy)propyl, 2-(1-methylpropoxy)propyl, 2-(2-methylpropoxy)propyl,
 20 2-(1,1-dimethylethoxy)propyl, 3-(methoxy)propyl, 3-(ethoxy)propyl, 3-(propoxy)propyl, 3-(1-methylethoxy)propyl, 3-(butoxy)propyl, 3-(1-methylpropoxy)propyl, 3-(2-methylpropoxy)propyl, 3-(1,1-dimethylethoxy)propyl, 2-(methoxy)butyl,
 25 2-(ethoxy)butyl, 2-(propoxy)butyl, 2-(1-methylethoxy)butyl, 2-(butoxy)butyl, 2-(1-methylpropoxy)butyl, 2-(2-methylpropoxy)butyl, 2-(1,1-dimethylethoxy)butyl, 3-(methoxy)butyl, 3-(ethoxy)butyl, 3-(propoxy)butyl, 3-(1-methylethoxy)butyl, 3-(butoxy)butyl,
 30 3-(1-methylpropoxy)butyl, 3-(2-methylpropoxy)butyl, 3-(1,1-dimethylethoxy)butyl, 4-(methoxy)butyl, 4-(ethoxy)butyl, 4-(propoxy)butyl, 4-(1-methylethoxy)butyl, 4-(butoxy)butyl, 4-(1-methylpropoxy)butyl, 4-(2-methylpropoxy)butyl or 4-(1,1-dimethylethoxy)butyl;
- 35 - C₁-C₄-alkoxy-C₁-C₄-alkoxy as alkoxyalkoxy moieties of C₁-C₄-alkoxy-C₁-C₄-alkoxycarbonyl: C₁-C₄-alkoxy which is substituted by C₁-C₄-alkoxy as mentioned above, i.e., for
 40 example, methoxymethoxy, ethoxymethoxy, propoxymethoxy, (1-methylethoxy)methoxy, butoxymethoxy, (1-methylpropoxy)methoxy, (2-methylpropoxy)methoxy, (1,1-dimethylethoxy)methoxy, 2-(methoxy)ethoxy, 2-(ethoxy)ethoxy, 2-(propoxy)ethoxy, 2-(1-methylethoxy)ethoxy, 2-(butoxy)ethoxy,
 45 2-(1-methylpropoxy)ethoxy, 2-(2-methylpropoxy)ethoxy, 2-(1,1-dimethylethoxy)ethoxy, 2-(methoxy)propoxy, 2-(ethoxy)propoxy, 2-(propoxy)propoxy,

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- 2-(1-methylethoxy)propoxy, 2-(butoxy)propoxy,
 2-(1-methylpropoxy)propoxy, 2-(2-methylpropoxy)propoxy,
 2-(1,1-dimethylethoxy)propoxy, 3-(methoxy)propoxy,
 3-(ethoxy)propoxy, 3-(propoxy)propoxy,
 5 3-(1-methylethoxy)propoxy, 3-(butoxy)propoxy,
 3-(1-methylpropoxy)propoxy, 3-(2-methylpropoxy)propoxy,
 3-(1,1-dimethylethoxy)propoxy, 2-(methoxy)butoxy,
 2-(ethoxy)butoxy, 2-(propoxy)butoxy,
 2-(1-methylethoxy)butoxy, 2-(butoxy)butoxy,
 10 2-(1-methylpropoxy)butoxy, 2-(2-methylpropoxy)butoxy,
 2-(1,1-dimethylethoxy)butoxy, 3-(methoxy)butoxy,
 3-(ethoxy)butoxy, 3-(propoxy)butoxy,
 3-(1-methylethoxy)butoxy, 3-(butoxy)butoxy,
 3-(1-methylpropoxy)butoxy, 3-(2-methylpropoxy)butoxy,
 15 3-(1,1-dimethylethoxy)butoxy, 4-(methoxy)butoxy,
 4-(ethoxy)butoxy, 4-(propoxy)butoxy,
 4-(1-methylethoxy)butoxy, 4-(butoxy)butoxy,
 4-(1-methylpropoxy)butoxy, 4-(2-methylpropoxy)butoxy or
 4-(1,1-dimethylethoxy)butoxy;
 20 - C₃-C₆-alkenyl, and the alkenyl moieties of
 C₃-C₆-alkenylcarbonyl, C₃-C₆-alkenyloxy,
 C₃-C₆-alkenyloxy carbonyl, C₃-C₆-alkenylaminocarbonyl,
 N-(C₃-C₆-alkenyl)-N-(C₁-C₆-alkyl)aminocarbonyl,
 25 N-(C₃-C₆-alkenyl)-N-(C₁-C₆-alkoxy)aminocarbonyl: for example
 prop-2-en-1-yl, but-1-en-4-yl, 1-methylprop-2-en-1-yl,
 2-methylprop-2-en-1-yl, 2-buten-1-yl, 1-penten-3-yl,
 1-penten-4-yl, 2-penten-4-yl, 1-methylbut-2-en-1-yl,
 2-methylbut-2-en-1-yl, 3-methylbut-2-en-1-yl,
 30 1-methylbut-3-en-1-yl, 2-methylbut-3-en-1-yl,
 3-methylbut-3-en-1-yl, 1,1-dimethylprop-2-en-1-yl,
 1,2-dimethylprop-2-en-1-yl, 1-ethylprop-2-en-1-yl,
 hex-3-en-1-yl, hex-4-en-1-yl, hex-5-en-1-yl,
 1-methylpent-3-en-1-yl, 2-methylpent-3-en-1-yl,
 35 3-methylpent-3-en-1-yl, 4-methylpent-3-en-1-yl,
 1-methylpent-4-en-1-yl, 2-methylpent-4-en-1-yl,
 3-methylpent-4-en-1-yl, 4-methylpent-4-en-1-yl,
 1,1-dimethylbut-2-en-1-yl, 1,1-dimethylbut-3-en-1-yl,
 1,2-dimethylbut-2-en-1-yl, 1,2-dimethylbut-3-en-1-yl,
 40 1,3-dimethylbut-2-en-1-yl, 1,3-dimethylbut-3-en-1-yl,
 2,2-dimethylbut-3-en-1-yl, 2,3-dimethylbut-2-en-1-yl,
 2,3-dimethylbut-3-en-1-yl, 3,3-dimethylbut-2-en-1-yl,
 1-ethylbut-2-en-1-yl, 1-ethylbut-3-en-1-yl,
 2-ethylbut-2-en-1-yl, 2-ethylbut-3-en-1-yl,
 45 1,1,2-trimethylprop-2-en-1-yl, 1-ethyl-1-methylprop-2-en-1-yl
 or 1-ethyl-2-methylprop-2-en-1-yl;

25

- C₂-C₆-alkenyl, and the alkenyl moieties of C₂-C₆-alkenylcarbonyl, phenyl-C₂-C₆-alkenylcarbonyl and heterocyclyl-C₂-C₆-alkenylcarbonyl: C₃-C₆-alkenyl as mentioned above, and also ethenyl;
- 5
- C₂-C₂₀-alkenyl as alkenyl moiety of C₂-C₂₀-alkenylcarbonyl: C₂-C₆-alkenyl as mentioned above, and also pentadecenyl or heptadecenyl;
- 10
- C₃-C₆-haloalkenyl: a C₃-C₆-alkenyl radical as mentioned above which is partially or fully substituted by fluorine, chlorine, bromine and/or iodine, i.e., for example, 2-chloroallyl, 3-chloroallyl, 2,3-dichloroallyl, 3,3-dichloroallyl, 2,3,3-trichloroallyl,
- 15
- 2,3-dichlorobut-2-enyl, 2-bromoallyl, 3-bromoallyl, 2,3-dibromoallyl, 3,3-dibromoallyl, 2,3,3-tribromoallyl or 2,3-dibromobut-2-enyl;
- C₃-C₆-alkynyl, and the alkynyl moieties of
- 20
- C₃-C₆-alkynylcarbonyl, C₃-C₆-alkynyloxy, C₃-C₆-alkynyloxycarbonyl, C₃-C₆-alkynylaminocarbonyl, N-(C₃-C₆-alkynyl)-N-(C₁-C₆-alkyl)aminocarbonyl, N-(C₃-C₆-alkynyl)-N-(C₁-C₆-alkoxyamino)carbonyl: for example propargyl, but-1-yn-3-yl, but-1-yn-4-yl, but-2-yn-1-yl,
- 25
- pent-1-yn-3-yl, pent-1-yn-4-yl, pent-1-yn-5-yl, pent-2-yn-1-yl, pent-2-yn-4-yl, pent-2-yn-5-yl, 3-methylbut-1-yn-3-yl, 3-methylbut-1-yn-4-yl, hex-1-yn-3-yl, hex-1-yn-4-yl, hex-1-yn-5-yl, hex-1-yn-6-yl, hex-2-yn-1-yl, hex-2-yn-4-yl, hex-2-yn-5-yl, hex-2-yn-6-yl, hex-3-yn-1-yl,
- 30
- hex-3-yn-2-yl, 3-methylpent-1-yn-3-yl, 3-methylpent-1-yn-4-yl, 3-methylpent-1-yn-5-yl, 4-methylpent-2-yn-4-yl or 4-methylpent-2-yn-5-yl;
- C₂-C₆-alkynyl, and the alkynyl moieties of
- 35
- C₂-C₆-alkynylcarbonyl: C₃-C₆-alkynyl as mentioned above, and also ethynyl;
- C₃-C₆-haloalkynyl: a C₃-C₆-alkynyl radical as mentioned above which is partially or fully substituted by fluorine,
- 40
- chlorine, bromine and/or iodine, i.e., for example, 1,1-difluoroprop-2-yn-1-yl, 3-iodoprop-2-yn-1-yl, 4-fluorobut-2-yn-1-yl, 4-chlorobut-2-yn-1-yl, 1,1-difluorobut-2-yn-1-yl, 4-iodobut-3-yn-1-yl, 5-fluoropent-3-yn-1-yl, 5-iodopent-4-yn-1-yl,
- 45
- 6-fluorohex-4-yn-1-yl or 6-iodohex-5-yn-1-yl;

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- C₃-C₆-cycloalkyl, and the cycloalkyl moieties of C₃-C₆-cycloalkylcarbonyl: for example cyclopropyl, cyclobutyl, cyclopentyl or cyclohexyl;
- 5 - heterocyclyl, and the heterocyclyl moieties of heterocyclloxy, heterocyclylcarbonyl, heterocyclyl-C₁-C₆-alkyl, heterocyclloxycarbonyl, heterocyclloxythiocarbonyl, heterocyclyl-C₂-C₆-alkenylcarbonyl, heterocyclylcarbonyl-C₁-C₆-alkyl,
- 10 N-(C₁-C₆-alkyl)-N-(heterocyclyl)aminocarbonyl, heterocyclylaminocarbonyl: a saturated, partially saturated or unsaturated 5- or 6-membered heterocyclic ring which is attached via carbon and contains one to four identical or
- 15 different heteroatoms selected from the following group: oxygen, sulfur and nitrogen, i.e., for example, 5-membered rings having, for example, one heteroatom, having two heteroatoms, having three heteroatoms or having four heteroatoms or, for example, 6-membered rings having, for example, one heteroatom, having two heteroatoms, having three
- 20 heteroatoms or having four heteroatoms, i.e. 5-membered rings having one heteroatom, such as:
- tetrahydrofuran-2-yl, tetrahydrofuran-3-yl, tetrahydrothien-2-yl, tetrahydrothien-3-yl,
- 25 tetrahydropyrrol-2-yl, tetrahydropyrrol-3-yl, 2,3-dihydrofuran-2-yl, 2,3-dihydrofuran-3-yl, 2,5-dihydrofuran-2-yl, 2,5-dihydrofuran-3-yl, 4,5-dihydrofuran-2-yl, 4,5-dihydrofuran-3-yl, 2,3-dihydrothien-2-yl, 2,3-dihydrothien-3-yl,
- 30 2,5-dihydrothien-2-yl, 2,5-dihydrothien-3-yl, 4,5-dihydrothien-2-yl, 4,5-dihydrothien-3-yl, 2,3-dihydro-1H-pyrrol-2-yl, 2,3-dihydro-1H-pyrrol-3-yl, 2,5-dihydro-1H-pyrrol-2-yl, 2,5-dihydro-1H-pyrrol-3-yl, 4,5-dihydro-1H-pyrrol-2-yl, 4,5-dihydro-1H-pyrrol-3-yl,
- 35 3,4-dihydro-2H-pyrrol-2-yl, 3,4-dihydro-2H-pyrrol-3-yl, 3,4-dihydro-5H-pyrrol-2-yl, 3,4-dihydro-5H-pyrrol-3-yl, 2-furyl, 3-furyl, 2-thienyl, 3-thienyl, pyrrol-2-yl or pyrrol-3-yl;
- 40 5-membered rings having two heteroatoms such as:
- tetrahydropyrazol-3-yl, tetrahydropyrazol-4-yl, tetrahydroisoxazol-3-yl, tetrahydroisoxazol-4-yl, tetrahydroisoxazol-5-yl, 1,2-oxathiolan-3-yl,
- 45 1,2-oxathiolan-4-yl, 1,2-oxathiolan-5-yl, tetrahydroisothiazol-3-yl, tetrahydroisothiazol-4-yl, tetrahydroisothiazol-5-yl, 1,2-dithiolan-3-yl,

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- 1,2-dithiolan-4-yl, tetrahydroimidazol-2-yl,
 tetrahydroimidazol-4-yl, tetrahydrooxazol-2-yl,
 tetrahydrooxazol-4-yl, tetrahydrooxazol-5-yl,
 tetrahydrothiazol-2-yl, tetrahydrothiazol-4-yl,
 5 tetrahydrothiazol-5-yl, 1,3-dioxolan-2-yl, 1,3-dioxolan-4-yl,
 1,3-oxathiolan-2-yl, 1,3-oxathiolan-4-yl,
 1,3-oxathiolan-5-yl, 1,3-dithiolan-2-yl, 1,3-dithiolan-4-yl,
 4,5-dihydro-1H-pyrazol-3-yl, 4,5-dihydro-1H-pyrazol-4-yl,
 4,5-dihydro-1H-pyrazol-5-yl, 2,5-dihydro-1H-pyrazol-3-yl,
 10 2,5-dihydro-1H-pyrazol-4-yl, 2,5-dihydro-1H-pyrazol-5-yl,
 4,5-dihydroisoxazol-3-yl, 4,5-dihydroisoxazol-4-yl,
 4,5-dihydroisoxazol-5-yl, 2,5-dihydroisoxazol-3-yl,
 2,5-dihydroisoxazol-4-yl, 2,5-dihydroisoxazol-5-yl,
 2,3-dihydroisoxazol-3-yl, 2,3-dihydroisoxazol-4-yl,
 15 2,3-dihydroisoxazol-5-yl, 4,5-dihydroisothiazol-3-yl,
 4,5-dihydroisothiazol-4-yl, 4,5-dihydroisothiazol-5-yl,
 2,5-dihydroisothiazol-3-yl, 2,5-dihydroisothiazol-4-yl,
 2,5-dihydroisothiazol-5-yl, 2,3-dihydroisothiazol-3-yl,
 2,3-dihydroisothiazol-4-yl, 2,3-dihydroisothiazol-5-yl,
 20 Δ^3 -1,2-dithiol-3-yl, Δ^3 -1,2-dithiol-4-yl, Δ^3 -1,2-dithiol-5-yl,
 4,5-dihydro-1H-imidazol-2-yl, 4,5-dihydro-1H-imidazol-4-yl,
 4,5-dihydro-1H-imidazol-5-yl, 2,5-dihydro-1H-imidazol-2-yl,
 2,5-dihydro-1H-imidazol-4-yl, 2,5-dihydro-1H-imidazol-5-yl,
 2,3-dihydro-1H-imidazol-2-yl, 2,3-dihydro-1H-imidazol-4-yl,
 25 4,5-dihydrooxazol-2-yl, 4,5-dihydrooxazol-4-yl,
 4,5-dihydrooxazol-5-yl, 2,5-dihydrooxazol-2-yl,
 2,5-dihydrooxazol-4-yl, 2,5-dihydrooxazol-5-yl,
 2,3-dihydrooxazol-2-yl, 2,3-dihydrooxazol-4-yl,
 2,3-dihydrooxazol-5-yl, 4,5-dihydrothiazol-2-yl,
 30 4,5-dihydrothiazol-4-yl, 4,5-dihydrothiazol-5-yl,
 2,5-dihydrothiazol-2-yl, 2,5-dihydrothiazol-4-yl,
 2,5-dihydrothiazol-5-yl, 2,3-dihydrothiazol-2-yl,
 2,3-dihydrothiazol-4-yl, 2,3-dihydrothiazol-5-yl,
 1,3-dioxol-2-yl, 1,3-dioxol-4-yl, 1,3-dithiol-2-yl,
 35 1,3-dithiol-4-yl, 1,3-oxathiol-2-yl, 1,3-oxathiol-4-yl,
 1,3-oxathiol-5-yl, pyrazol-3-yl, pyrazol-4-yl, isoxazol-3-yl,
 isoxazol-4-yl, isoxazol-5-yl, isothiazol-3-yl,
 isothiazol-4-yl, isothiazol-5-yl, imidazol-2-yl,
 imidazol-4-yl, oxazol-2-yl, oxazol-4-yl, oxazol-5-yl,
 40 thiazol-2-yl, thiazol-4-yl or thiazol-5-yl;

5-membered rings having three heteroatoms such as:

- 1,2,3- Δ^2 -oxadiazolin-4-yl, 1,2,3- Δ^2 -oxadiazolin-5-yl,
 45 1,2,4- Δ^4 -oxadiazolin-3-yl, 1,2,4- Δ^4 -oxadiazolin-5-yl,
 1,2,4- Δ^2 -oxadiazolin-3-yl, 1,2,4- Δ^2 -oxadiazolin-5-yl,
 1,2,4- Δ^3 -oxadiazolin-3-yl, 1,2,4- Δ^3 -oxadiazolin-5-yl,

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- 1,3,4- Δ^2 -oxadiazolin-2-yl, 1,3,4- Δ^2 -oxadiazolin-5-yl,
1,3,4- Δ^3 -oxadiazolin-2-yl, 1,3,4-oxadiazolin-2-yl,
1,2,3- Δ^2 -thiadiazolin-4-yl, 1,2,3- Δ^2 -thiadiazolin-5-yl,
1,2,4- Δ^4 -thiadiazolin-3-yl, 1,2,4- Δ^4 -thiadiazolin-5-yl,
5 1,2,4- Δ^3 -thiadiazolin-3-yl, 1,2,4- Δ^3 -thiadiazolin-5-yl,
1,2,4- Δ^2 -thiadiazolin-3-yl, 1,2,4- Δ^2 -thiadiazolin-5-yl,
1,3,4- Δ^2 -thiadiazolin-2-yl, 1,3,4- Δ^2 -thiadiazolin-5-yl,
1,3,4- Δ^3 -thiadiazolin-2-yl, 1,3,4-thiadiazolin-2-yl,
1,3,2-dioxathiolan-4-yl, 1,2,3- Δ^2 -triazolin-4-yl,
10 1,2,3- Δ^2 -triazolin-5-yl, 1,2,4- Δ^2 -triazolin-3-yl,
1,2,4- Δ^2 -triazolin-5-yl, 1,2,4- Δ^3 -triazolin-3-yl,
1,2,4- Δ^3 -triazolin-5-yl, 1,2,4- Δ^1 -triazolin-2-yl,
1,2,4-triazolin-3-yl, 3H-1,2,4-dithiazol-5-yl,
2H-1,3,4-dithiazol-5-yl, 2H-1,3,4-oxathiazol-5-yl,
15 1,2,3-oxadiazol-4-yl, 1,2,3-oxadiazol-5-yl,
1,2,4-oxadiazol-3-yl, 1,2,4-oxadiazol-5-yl,
1,3,4-oxadiazol-2-yl, 1,2,3-thiadiazol-4-yl,
1,2,3-thiadiazol-5-yl, 1,2,4-thiadiazol-3-yl,
1,2,4-thiadiazol-5-yl, 1,3,4-thiadiazolyl-2-yl,
20 1,2,3-triazol-4-yl or 1,2,4-triazol-3-yl;

5-membered rings having four heteroatoms such as:

tetrazol-5-yl;

25

6-membered rings having one heteroatom such as:

- tetrahydropyran-2-yl, tetrahydropyran-3-yl,
tetrahydropyran-4-yl, piperidin-2-yl, piperidin-3-yl,
30 piperidin-4-yl, tetrahydrothiopyran-2-yl,
tetrahydrothiopyran-3-yl, tetrahydrothiopyran-4-yl,
2H-3,4-dihydropyran-6-yl, 2H-3,4-dihydropyran-5-yl,
2H-3,4-dihydropyran-4-yl, 2H-3,4-dihydropyran-3-yl,
2H-3,4-dihydropyran-2-yl, 2H-3,4-dihydropyran-6-yl,
35 2H-3,4-dihydrothiopyran-5-yl, 2H-3,4-dihydrothiopyran-4-yl,
2H-3,4-dihydropyran-3-yl, 2H-3,4-dihydropyran-2-yl,
1,2,3,4-tetrahydropyridin-6-yl,
1,2,3,4-tetrahydropyridin-5-yl,
1,2,3,4-tetrahydropyridin-4-yl,
40 1,2,3,4-tetrahydropyridin-3-yl,
1,2,3,4-tetrahydropyridin-2-yl, 2H-5,6-dihydropyran-2-yl,
2H-5,6-dihydropyran-3-yl, 2H-5,6-dihydropyran-4-yl,
2H-5,6-dihydropyran-5-yl, 2H-5,6-dihydropyran-6-yl,
2H-5,6-dihydrothiopyran-2-yl, 2H-5,6-dihydrothiopyran-3-yl,
45 2H-5,6-dihydrothiopyran-4-yl, 2H-5,6-dihydrothiopyran-5-yl,
2H-5,6-dihydrothiopyran-6-yl, 1,2,5,6-tetrahydropyridin-2-yl,
1,2,5,6-tetrahydropyridin-3-yl,

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- 1,2,5,6-tetrahydropyridin-4-yl,
1,2,5,6-tetrahydropyridin-5-yl,
1,2,5,6-tetrahydropyridin-6-yl,
2,3,4,5-tetrahydropyridin-2-yl,
5 2,3,4,5-tetrahydropyridin-3-yl,
2,3,4,5-tetrahydropyridin-4-yl,
2,3,4,5-tetrahydropyridin-5-yl,
2,3,4,5-tetrahydropyridin-6-yl, 4H-pyran-2-yl, 4H-pyran-3-yl,
4H-pyran-4-yl, 4H-thiopyran-2-yl, 4H-thiopyran-3-yl,
10 4H-thiopyran-4-yl, 1,4-dihydropyridin-2-yl,
1,4-dihydropyridin-3-yl, 1,4-dihydropyridin-4-yl,
2H-pyran-2-yl, 2H-pyran-3-yl, 2H-pyran-4-yl, 2H-pyran-5-yl,
2H-pyran-6-yl, 2H-thiopyran-2-yl, 2H-thiopyran-3-yl,
2H-thiopyran-4-yl, 2H-thiopyran-5-yl, 2H-thiopyran-6-yl,
15 1,2-dihydropyridin-2-yl, 1,2-dihydropyridin-3-yl,
1,2-dihydropyridin-4-yl, 1,2-dihydropyridin-5-yl,
1,2-dihydropyridin-6-yl, 3,4-dihydropyridin-2-yl,
3,4-dihydropyridin-3-yl, 3,4-dihydropyridin-4-yl,
3,4-dihydropyridin-5-yl, 3,4-dihydropyridin-6-yl,
20 2,5-dihydropyridin-2-yl, 2,5-dihydropyridin-3-yl,
2,5-dihydropyridin-4-yl, 2,5-dihydropyridin-5-yl,
2,5-dihydropyridin-6-yl, 2,3-dihydropyridin-2-yl,
2,3-dihydropyridin-3-yl, 2,3-dihydropyridin-4-yl,
2,3-dihydropyridin-5-yl, 2,3-dihydropyridin-6-yl,
25 pyridin-2-yl, pyridin-3-yl or pyridin-4-yl;

6-membered rings having two heteroatoms such as:

- 1,3-dioxan-2-yl, 1,3-dioxan-4-yl, 1,3-dioxan-5-yl,
30 1,4-dioxan-2-yl, 1,3-dithian-2-yl, 1,3-dithian-4-yl,
1,3-dithian-5-yl, 1,4-dithian-2-yl, 1,3-oxathian-2-yl,
1,3-oxathian-4-yl, 1,3-oxathian-5-yl, 1,3-oxathian-6-yl,
1,4-oxathian-2-yl, 1,4-oxathian-3-yl, 1,2-dithian-3-yl,
1,2-dithian-4-yl, hexahydropyrimidin-2-yl,
35 hexahydropyrimidin-4-yl, hexahydropyrimidin-5-yl,
hexahydropyrazin-2-yl, hexahydropyridazin-3-yl,
hexahydropyridazin-4-yl, tetrahydro-1,3-oxazin-2-yl,
tetrahydro-1,3-oxazin-4-yl, tetrahydro-1,3-oxazin-5-yl,
tetrahydro-1,3-oxazin-6-yl, tetrahydro-1,3-thiazin-2-yl,
40 tetrahydro-1,3-thiazin-4-yl, tetrahydro-1,3-thiazin-5-yl,
tetrahydro-1,3-thiazin-6-yl, tetrahydro-1,4-thiazin-2-yl,
tetrahydro-1,4-thiazin-3-yl, tetrahydro-1,4-oxazin-2-yl,
tetrahydro-1,4-oxazin-3-yl, tetrahydro-1,2-oxazin-3-yl,
tetrahydro-1,2-oxazin-4-yl, tetrahydro-1,2-oxazin-5-yl,
45 tetrahydro-1,2-oxazin-6-yl, 2H-5,6-dihydro-1,2-oxazin-3-yl,
2H-5,6-dihydro-1,2-oxazin-4-yl,
2H-5,6-dihydro-1,2-oxazin-5-yl,

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- 2H-5,6-dihydro-1,2-oxazin-6-yl,
2H-5,6-dihydro-1,2-thiazin-3-yl,
2H-5,6-dihydro-1,2-thiazin-4-yl,
2H-5,6-dihydro-1,2-thiazin-5-yl,
5 2H-5,6-dihydro-1,2-thiazin-6-yl,
4H-5,6-dihydro-1,2-oxazin-3-yl,
4H-5,6-dihydro-1,2-oxazin-4-yl,
4H-5,6-dihydro-1,2-oxazin-5-yl,
4H-5,6-dihydro-1,2-oxazin-6-yl,
10 4H-5,6-dihydro-1,2-thiazin-3-yl,
4H-5,6-dihydro-1,2-thiazin-4-yl,
4H-5,6-dihydro-1,2-thiazin-5-yl,
4H-5,6-dihydro-1,2-thiazin-6-yl,
2H-3,6-dihydro-1,2-oxazin-3-yl,
15 2H-3,6-dihydro-1,2-oxazin-4-yl,
2H-3,6-dihydro-1,2-oxazin-5-yl,
2H-3,6-dihydro-1,2-oxazin-6-yl,
2H-3,6-dihydro-1,2-thiazin-3-yl,
2H-3,6-dihydro-1,2-thiazin-4-yl,
20 2H-3,6-dihydro-1,2-thiazin-5-yl,
2H-3,6-dihydro-1,2-thiazin-6-yl,
2H-3,4-dihydro-1,2-oxazin-3-yl,
2H-3,4-dihydro-1,2-oxazin-4-yl,
2H-3,4-dihydro-1,2-oxazin-5-yl,
25 2H-3,4-dihydro-1,2-oxazin-6-yl,
2H-3,4-dihydro-1,2-thiazin-3-yl,
2H-3,4-dihydro-1,2-thiazin-4-yl,
2H-3,4-dihydro-1,2-thiazin-5-yl,
2H-3,4-dihydro-1,2-thiazin-6-yl,
30 2,3,4,5-tetrahydropyridazin-3-yl,
2,3,4,5-tetrahydropyridazin-4-yl,
2,3,4,5-tetrahydropyridazin-5-yl,
2,3,4,5-tetrahydropyridazin-6-yl,
3,4,5,6-tetrahydropyridazin-3-yl,
35 3,4,5,6-tetrahydropyridazin-4-yl,
1,2,5,6-tetrahydropyridazin-3-yl,
1,2,5,6-tetrahydropyridazin-4-yl,
1,2,5,6-tetrahydropyridazin-5-yl,
1,2,5,6-tetrahydropyridazin-6-yl,
40 1,2,3,6-tetrahydropyridazin-3-yl,
1,2,3,6-tetrahydropyridazin-4-yl,
4H-5,6-dihydro-1,3-oxazin-2-yl,
4H-5,6-dihydro-1,3-oxazin-4-yl,
4H-5,6-dihydro-1,3-oxazin-5-yl,
45 4H-5,6-dihydro-1,3-oxazin-6-yl,
4H-5,6-dihydro-1,3-thiazin-2-yl,
4H-5,6-dihydro-1,3-thiazin-4-yl,

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- 4H-5,6-dihydro-1,3-thiazin-5-yl,
4H-5,6-dihydro-1,3-thiazin-6-yl,
3,4,5,6-tetrahydropyrimidin-2-yl,
3,4,5,6-tetrahydropyrimidin-4-yl,
5 3,4,5,6-tetrahydropyrimidin-5-yl,
3,4,5,6-tetrahydropyrimidin-6-yl,
1,2,3,4-tetrahydropyrazin-2-yl,
1,2,3,4-tetrahydropyrazin-5-yl,
1,2,3,4-tetrahydropyrimidin-2-yl,
10 1,2,3,4-tetrahydropyrimidin-4-yl,
1,2,3,4-tetrahydropyrimidin-5-yl,
1,2,3,4-tetrahydropyrimidin-6-yl,
2,3-dihydro-1,4-thiazin-2-yl, 2,3-dihydro-1,4-thiazin-3-yl,
2,3-dihydro-1,4-thiazin-5-yl, 2,3-dihydro-1,4-thiazin-6-yl,
15 2H-1,2-oxazin-3-yl, 2H-1,2-oxazin-4-yl, 2H-1,2-oxazin-5-yl,
2H-1,2-oxazin-6-yl, 2H-1,2-thiazin-3-yl, 2H-1,2-thiazin-4-yl,
2H-1,2-thiazin-5-yl, 2H-1,2-thiazin-6-yl, 4H-1,2-oxazin-3-yl,
4H-1,2-oxazin-4-yl, 4H-1,2-oxazin-5-yl, 4H-1,2-oxazin-6-yl,
4H-1,2-thiazin-3-yl, 4H-1,2-thiazin-4-yl,
20 4H-1,2-thiazin-5-yl, 4H-1,2-thiazin-6-yl, 6H-1,2-oxazin-3-yl,
6H-1,2-oxazin-4-yl, 6H-1,2-oxazin-5-yl, 6H-1,2-oxazin-6-yl,
6H-1,2-thiazin-3-yl, 6H-1,2-thiazin-4-yl,
6H-1,2-thiazin-5-yl, 6H-1,2-thiazin-6-yl, 2H-1,3-oxazin-2-yl,
2H-1,3-oxazin-4-yl, 2H-1,3-oxazin-5-yl, 2H-1,3-oxazin-6-yl,
25 2H-1,3-thiazin-2-yl, 2H-1,3-thiazin-4-yl,
2H-1,3-thiazin-5-yl, 2H-1,3-thiazin-6-yl, 4H-1,3-oxazin-2-yl,
4H-1,3-oxazin-4-yl, 4H-1,3-oxazin-5-yl, 4H-1,3-oxazin-6-yl,
4H-1,3-thiazin-2-yl, 4H-1,3-thiazin-4-yl,
4H-1,3-thiazin-5-yl, 4H-1,3-thiazin-6-yl, 6H-1,3-oxazin-2-yl,
30 6H-1,3-oxazin-4-yl, 6H-1,3-oxazin-5-yl, 6H-1,3-oxazin-6-yl,
6H-1,3-thiazin-2-yl, 6H-1,3-oxazin-4-yl, 6H-1,3-oxazin-5-yl,
6H-1,3-thiazin-6-yl, 2H-1,4-oxazin-2-yl, 2H-1,4-oxazin-3-yl,
2H-1,4-oxazin-5-yl, 2H-1,4-oxazin-6-yl, 2H-1,4-thiazin-2-yl,
2H-1,4-thiazin-3-yl, 2H-1,4-thiazin-5-yl,
35 2H-1,4-thiazin-6-yl, 4H-1,4-oxazin-2-yl, 4H-1,4-oxazin-3-yl,
4H-1,4-thiazin-2-yl, 4H-1,4-thiazin-3-yl,
1,4-dihydropyridazin-3-yl, 1,4-dihydropyridazin-4-yl,
1,4-dihydropyridazin-5-yl, 1,4-dihydropyridazin-6-yl,
1,4-dihydropyrazin-2-yl, 1,2-dihydropyrazin-2-yl,
40 1,2-dihydropyrazin-3-yl, 1,2-dihydropyrazin-5-yl,
1,2-dihydropyrazin-6-yl, 1,4-dihydropyrimidin-2-yl,
1,4-dihydropyrimidin-4-yl, 1,4-dihydropyrimidin-5-yl,
1,4-dihydropyrimidin-6-yl, 3,4-dihydropyrimidin-2-yl,
3,4-dihydropyrimidin-4-yl, 3,4-dihydropyrimidin-5-yl or
45 3,4-dihydropyrimidin-6-yl, pyridazin-3-yl, pyridazin-4-yl,

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pyrimidin-2-yl, pyrimidin-4-yl, pyrimidin-5-yl or
pyrazin-2-yl;

6-membered rings having three heteroatoms such as:

5

1,3,5-triazin-2-yl, 1,2,4-triazin-3-yl, 1,2,4-triazin-5-yl,
1,2,4-triazin-6-yl;

6-membered rings having four heteroatoms such as:

10

1,2,4,5-tetrazin-3-yl;

where, if appropriate, the sulfur of the abovementioned
heterocycles may be oxidized to S=O or S(=O)₂

15

and where a bicyclic ring system may be formed with a
fused-on phenyl ring or with a C₃-C₆-carbocycle or with a
further 5- to 6-membered heterocycle.

20 - N-bonded heterocyclyl: a saturated, partially saturated or
unsaturated 5- or 6-membered heterocyclic ring which is
attached via nitrogen and contains at least one nitrogen and,
if appropriate, one to three identical or different
heteroatoms selected from the following group: oxygen, sulfur
25 and nitrogen, i.e., for example,

N-bonded 5-membered rings such as:

30 tetrahydropyrrol-1-yl, 2,3-dihydro-1H-pyrrol-1-yl,
2,5-dihydro-1H-pyrrol-1-yl, pyrrol-1-yl,
tetrahydropyrazol-1-yl, tetrahydroisoxazol-2-yl,
tetrahydroisothiazol-2-yl, tetrahydroimidazol-1-yl,
tetrahydrooxazol-3-yl, tetrahydrothiazol-3-yl,
4,5-dihydro-1H-pyrazol-1-yl, 2,5-dihydro-1H-pyrazol-1-yl,
35 2,3-dihydro-1H-pyrazol-1-yl, 2,5-dihydroisoxazol-2-yl,
2,3-dihydroisoxazol-2-yl, 2,5-dihydroisothiazol-2-yl,
2,3-dihydroisoxazol-2-yl, 4,5-dihydro-1H-imidazol-1-yl,
2,5-dihydro-1H-imidazol-1-yl, 2,3-dihydro-1H-imidazol-1-yl,
2,3-dihydrooxazol-3-yl, 2,3-dihydrothiazol-3-yl,
40 pyrazol-1-yl, imidazol-1-yl, 1,2,4- Δ^4 -oxadiazolin-2-yl,
1,2,4- Δ^2 -oxadiazolin-4-yl, 1,2,4- Δ^3 -oxadiazolin-2-yl,
1,3,4- Δ^2 -oxadiazolin-4-yl, 1,2,4- Δ^5 -thiadiazolin-2-yl,
1,2,4- Δ^3 -thiadiazolin-2-yl, 1,2,4- Δ^2 -thiadiazolin-4-yl,
1,3,4- Δ^2 -thiadiazolin-4-yl, 1,2,3- Δ^2 -triazolin-1-yl,
45 1,2,4- Δ^2 -triazolin-1-yl, 1,2,4- Δ^2 -triazolin-4-yl,

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1,2,4- Δ^3 -triazolin-1-yl, 1,2,4- Δ^1 -triazolin-4-yl,
1,2,3-triazol-1-yl, 1,2,4-triazol-1-yl, tetrazol-1-yl;

and also N-bonded 6-membered rings such as:

- 5 piperidin-1-yl, 1,2,3,4-tetrahydropyridin-1-yl,
1,2,5,6-tetrahydropyridin-1-yl, 1,4-dihydropyridin-1-yl,
1,2-dihydropyridin-1-yl, hexahydropyrimidin-1-yl,
hexahydropyrazin-1-yl, hexahydropyridazin-1-yl,
10 tetrahydro-1,3-oxazin-3-yl, tetrahydro-1,3-thiazin-3-yl,
tetrahydro-1,4-thiazin-4-yl, tetrahydro-1,4-oxazin-4-yl,
tetrahydro-1,2-oxazin-2-yl, 2H-5,6-dihydro-1,2-oxazin-2-yl,
2H-5,6-dihydro-1,2-thiazin-2-yl,
2H-3,6-dihydro-1,2-oxazin-2-yl,
15 2H-3,6-dihydro-1,2-thiazin-2-yl,
2H-3,4-dihydro-1,2-oxazin-2-yl,
2H-3,4-dihydro-1,2-thiazin-2-yl,
2,3,4,5-tetrahydropyridazin-2-yl,
1,2,5,6-tetrahydropyridazin-1-yl,
20 1,2,5,6-tetrahydropyridazin-2-yl,
1,2,3,6-tetrahydropyridazin-1-yl,
3,4,5,6-tetrahydropyrimidin-3-yl,
1,2,3,4-tetrahydropyrazin-1-yl,
1,2,3,4-tetrahydropyrimidin-1-yl,
25 1,2,3,4-tetrahydropyrimidin-3-yl,
2,3-dihydro-1,4-thiazin-4-yl, 2H-1,2-oxazin-2-yl,
2H-1,2-thiazin-2-yl, 4H-1,4-oxazin-4-yl, 4H-1,4-thiazin-4-yl,
1,4-dihydropyridazin-1-yl, 1,4-dihydropyrazin-1-yl,
1,2-dihydropyrazin-1-yl, 1,4-dihydropyrimidin-1-yl or
30 3,4-dihydropyrimidin-3-yl;

and also N-bonded cyclic imides such as:

- 35 phthalimide, tetrahydrophthalimide, succinimide, maleimide,
glutarimide, 5-oxotriazolin-1-yl, 5-oxo-1,3,4-
oxadiazolin-4-yl or 2,4-dioxo-(1H,3H)-pyrimidin-3-yl;

- 40 where a bicyclic ring system may be formed with a fused-on
phenyl ring or with a C₃-C₆-carbocycle or a further 5- to
6-membered heterocycle.

- All phenyl rings, heterocyclyl or N-heterocyclyl radicals and all
phenyl components in phenoxy, phenyl-C₁-C₆-alkyl,
phenylcarbonyl-C₁-C₆-alkyl, phenylcarbonyl, phenylalkenylcarbonyl,
45 phenoxycarbonyl, phenyloxythiocarbonyl, phenylaminocarbonyl and
N-(C₁-C₆-alkyl)-N-phenylaminocarbonyl or heterocyclyl components
in heterocyclyloxy, heterocyclyl-C₁-C₆-alkyl,

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- heterocyclylcarbonyl-C₁-C₆-alkyl, heterocyclylcarbonyl, heterocyclyloxythiocarbonyl, heterocyclylalkenylcarbonyl, heterocyclyloxycarbonyl, heterocyclylaminocarbonyl and N-(C₁-C₆-alkyl)-N-heterocyclylaminocarbonyl are, unless stated
- 5 otherwise, preferably unsubstituted, or they carry one to three halogen atoms and/or one nitro group, one cyano radical and/or one or two methyl, trifluoromethyl, methoxy or trifluoromethoxy substituents.
- 10 Furthermore, the expression "Y together with the two carbons to which it is attached forms a saturated, partially saturated or unsaturated heterocycle which contains one to three identical or different heteroatoms selected from the following group: oxygen, sulfur and nitrogen" denotes, for example, 5-membered rings
- 15 having one heteroatom such as:
- tetrahydrofurandiyl, tetrahydrothienediyl, tetrahydropyrrolediyl, dihydrofurandiyl, dihydrothienediyl, dihydropyrrolediyl, furandiyl, thienediyl or pyrrolediyl;
- 20 or 5-membered rings having two heteroatoms such as:
- tetrahydropyrazolediyl, tetrahydroisoxazolediyl, 1,2-oxathiolanediyl, tetrahydroisothiazolediyl,
- 25 1,2-dithiolanediyl, tetrahydroimidazolediyl, tetrahydrooxazolediyl, tetrahydrothiazolediyl, 1,3-dioxolanediyl, 1,3-oxathiolanediyl, dihydropyrazolediyl, dihydroisoxazolediyl, dihydroisothiazolediyl, 1,2-dithiolediyl, dihydroimidazolediyl, dihydrooxazolediyl, dihydrothiazolediyl, dioxolediyl,
- 30 oxathiolediyl, pyrazolediyl, isoxazolediyl, isothiazolediyl, imidazolediyl, oxazolediyl or thiazolediyl;
- or 5-membered rings having three heteroatoms such as:
- 35 1,2,3-oxadiazolinediyl, 1,2,3-thiadiazolinediyl, 1,2,3-triazolinediyl, 1,2,3-oxadiazolediyl, 1,2,3-thiadiazolediyl or 1,2,3-triazolediyl;
- or 6-membered rings having one heteroatom such as:
- 40 tetrahydropyrandiyl, piperidinediyl, tetrahydrothiopyrandiyl, dihydropyrandiyl, dihydrothiopyrandiyl, tetrahydropyridinediyl, pyrandiyl, thiopyrandiyl, dihydropyrinediyl or pyridinediyl;
- 45 or 6-membered rings having two heteroatoms such as:

35

1,3-dioxanediyl, 1,4-dioxanediyl, 1,3-dithianediyl,
1,4-dithianediyl, 1,3-oxathianediyl, 1,4-oxathianediyl,
1,2-dithianediyl, hexahydropyrimidinediyl, hexahydropyrazinediyl,
hexahydropyridazinediyl, tetrahydro-1,3-oxazinediyl,
5 tetrahydro-1,3-thiazinediyl, tetrahydro-1,4-oxazinediyl,
tetrahydro-1,2-oxazinediyl, dihydro-1,2-oxazinediyl,
dihydro-1,2-thiazinediyl, tetrahydropyridazinediyl,
dihydro-1,3-oxazinediyl, dihydro-1,3-oxazinediyl,
dihydro-1,3-thiazinediyl, tetrahydropyrimidinediyl,
10 tetrahydropyrazinediyl, dihydro-1,4-thiazinediyl,
dihydro-1,4-oxazinediyl, dihydro-1,4-dioxinediyl,
dihydro-1,4-dithiinediyl, 1,2-oxazinediyl, 1,2-thiazinediyl,
1,3-oxazinediyl, 1,3-thiazinediyl, 1,4-oxazinediyl,
1,4-thiazinediyl, dihydropyridazinediyl, dihydropyrazinediyl,
15 dihydropyrimidinediyl, pyridazinediyl, pyrimidinediyl or
pyrazinediyl;

or 6-membered rings having 3 heteroatoms such as:

20 1,2,4-triazinediyl;

where, if appropriate, the sulfur of the abovementioned heterocycles may be oxidized to S=O or S(=O)₂;

25 and where the moiety is fused to the skeleton via two adjacent carbon atoms.

The compounds of the formula I according to the invention where R⁹ = IIa are referred to as compounds of the formula Ia, and

30 compounds of the formula I where $R^9 = \text{IIb}$ are referred to as Ib.

Preference is given to the compounds of the formula I, where

35 R¹¹ is hydrogen, C₁-C₆-alkyl, C₁-C₆-haloalkyl, hydroxyl, C₁-C₆-alkoxy or C₁-C₆-haloalkoxy;

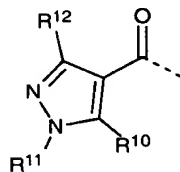
Preference is likewise given to the compounds of the formula Ia.

With respect to the use of the compounds of the formula I
40 according to the invention as herbicides, the variables
preferably have the following meanings, in each case alone or in
combination:

45 X is oxygen, sulfur, S=O, S(=O)₂, CR⁶R⁷, NR⁸ or a bond;

36

- Y together with the two carbons to which it is attached forms a saturated, partially saturated or unsaturated 5- or 6-membered heterocycle which contains one or two identical or different heteroatoms selected from the following group: oxygen, sulfur or nitrogen;
- 5 R^1, R^2 are hydrogen or C_1-C_6 -alkyl;
- R^3 is halogen, C_1-C_6 -alkyl or C_1-C_6 -alkoxy;
- 10 R^4 is nitro, halogen, cyano, C_1-C_6 -alkyl, C_1-C_6 -haloalkyl, C_1-C_6 -alkoxy, C_1-C_6 -haloalkoxy, C_1-C_6 -alkylthio, C_1-C_6 -haloalkylthio, C_1-C_6 -alkylsulfinyl, C_1-C_6 -haloalkylsulfinyl, C_1-C_6 -alkylsulfonyl, C_1-C_6 -haloalkylsulfonyl, aminosulfonyl, $N-(C_1-C_6\text{-alkyl})$ aminosulfonyl, $N,N\text{-di}(C_1-C_6\text{-alkyl})$ aminosulfonyl, $N-(C_1-C_6\text{-alkylsulfonyl})$ amino, $N-(C_1-C_6\text{-haloalkylsulfonyl})$ amino, $N-(C_1-C_6\text{-alkyl})$ - $N-(C_1-C_6\text{-alkylsulfonyl})$ amino or $N-(C_1-C_6\text{-alkyl})$ - $N-(C_1-C_6\text{-haloalkylsulfonyl})$ amino; in particular nitro, halogen, C_1-C_6 -alkyl, C_1-C_6 -haloalkyl, C_1-C_6 -alkoxy, C_1-C_6 -haloalkoxy, C_1-C_6 -alkylthio, C_1-C_6 -haloalkylthio, C_1-C_6 -alkylsulfonyl or C_1-C_6 -haloalkylsulfonyl;
- 15 R^5 is hydrogen;
- R^6, R^7 are hydrogen or C_1-C_6 -alkyl;
- 30 R^8 is C_1-C_6 -alkyl, C_1-C_6 -alkylcarbonyl or C_1-C_6 -alkylsulfonyl;
- l is 0, 1 or 2;
- 35 R^9 is a radical IIa



IIa

45 where

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- R¹⁰ is hydroxyl, mercapto, halogen, OR¹³, SR¹³, SO₂R¹⁴ or N-bonded heterocyclyl, where the heterocyclyl radical may be partially or fully halogenated and/or may carry one to three of the following radicals:
- 5 nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy or C₁-C₄-haloalkoxy;
- R¹¹ is hydrogen, C₁-C₆-alkyl, C₁-C₆-haloalkyl or C₃-C₆-cycloalkyl;
- 10 R¹² is hydrogen, C₁-C₆-alkyl or C₁-C₆-haloalkyl;
- R¹³ is C₁-C₆-alkyl, C₃-C₆-alkenyl, C₃-C₆-haloalkenyl, C₃-C₆-alkynyl, C₁-C₆-alkylcarbonyl,
- 15 C₂-C₆-alkenylcarbonyl, C₃-C₆-cycloalkylcarbonyl, C₁-C₆-alkoxycarbonyl, C₃-C₆-alkenyloxy carbonyl, C₃-C₆-alkynyloxy carbonyl, C₁-C₆-alkylthiocarbonyl, C₁-C₆-alkylaminocarbonyl, C₃-C₆-alkenylaminocarbonyl, C₃-C₆-alkynylaminocarbonyl,
- 20 N,N-di(C₁-C₆-alkyl)aminocarbonyl, N-(C₃-C₆-alkenyl)-N-(C₁-C₆-alkyl)aminocarbonyl, N-(C₃-C₆-alkynyl)-N-(C₁-C₆-alkyl)aminocarbonyl, N-(C₁-C₆-alkoxy)-N-(C₁-C₆-alkyl)aminocarbonyl, N-(C₃-C₆-alkenyl)-N-(C₁-C₆-alkoxy)aminocarbonyl
- 25 N-(C₃-C₆-alkynyl)-N-(C₁-C₆-alkoxy)aminocarbonyl, di(C₁-C₆-alkyl)aminothiocarbonyl, C₁-C₆-alkylcarbonyl-C₁-C₆-alkyl, C₁-C₆-alkoxyimino-C₁-C₆-alkyl, N-(C₁-C₆-alkylamino)imino-C₁-C₆-alkyl or
- 30 N,N-di(C₁-C₆-alkylamino)imino-C₁-C₆-alkyl, where the abovementioned alkyl, cycloalkyl and alkoxy radicals may be partially or fully halogenated and/or may carry one to three of the following groups:
- 35 cyano, C₁-C₄-alkoxy, C₁-C₄-alkylthio, C₁-C₄-alkylcarbonyl, C₁-C₄-alkoxycarbonyl, hydroxycarbonyl, di(C₁-C₄-alkyl)aminocarbonyl, C₁-C₄-alkylcarbonyloxy or C₃-C₆-cycloalkyl;
- 40 is phenyl, heterocyclyl, phenyl-C₁-C₆-alkyl, heterocyclyl-C₁-C₆-alkyl, phenylcarbonyl-C₁-C₆-alkyl, heterocyclylcarbonyl-C₁-C₆-alkyl, phenylcarbonyl, heterocyclylcarbonyl, phenoxycarbonyl, phenyloxythiocarbonyl, heterocycliloxy carbonyl, heterocycliloxythiocarbonyl,
- 45 phenyl-C₂-C₆-alkenylcarbonyl or heterocyclyl-C₂-C₆-alkenylcarbonyl, where the phenyl and the heterocyclyl radical of the 14 last mentioned

38

substituents may be partially or fully halogenated and/or may carry one to three of the following radicals:

5 nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy, C₁-C₄-haloalkoxy, heterocyclyl or N-bonded heterocyclyl, where the two lastmentioned substituents for their part may be partially or fully halogenated and/or may carry one to three of the following radicals: nitro, cyano, C₁-C₄-alkyl, 10 C₁-C₄-haloalkyl, C₁-C₄-alkoxy or C₁-C₄-haloalkoxy;

R¹⁴ is C₁-C₆-alkyl, C₃-C₆-alkenyl, C₃-C₆-haloalkenyl, C₃-C₆-cycloalkyl, C₁-C₆-alkoxy or 15 di(C₁-C₆-haloalkyl)amino, where the abovementioned alkyl, cycloalkyl and alkoxy radicals may be partially or fully halogenated and/or may carry one to three of the following groups:

20 cyano, C₁-C₄-alkoxy, C₁-C₄-alkylthio, C₁-C₄-alkylcarbonyl, C₁-C₄-alkoxycarbonyl, hydroxycarbonyl, di(C₁-C₄-alkyl)aminocarbonyl, C₁-C₄-alkylcarbonyloxy or C₃-C₆-cycloalkyl;

is phenyl, heterocyclyl, phenyl-C₁-C₆-alkyl, heterocyclyl-C₁-C₆-alkyl, phenoxy, heterocycliloxy, 25 where the phenyl and the heterocyclyl radical of the lastmentioned substituents may be partially or fully halogenated and/or may carry one to three of the following radicals: nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy 30 or C₁-C₄-haloalkoxy.

Particular preference is given to compounds of the formula I where the variables have the following meanings, either alone or in combination:

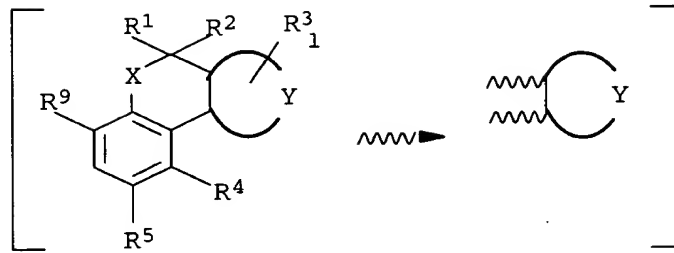
35 X is oxygen, sulfur, S=O, S(=O)₂, CR⁶R⁷ or a bond;

Y together with the two carbons to which it is attached forms the following heterocycles: 40 (in the embodiments of the heterocycles below, the upper undulating line represents in each case the link to the hydrocarbon which carries the radicals R¹ and R², and the lower undulating line represents the link to the meta-carbon of the benzoyl moiety).

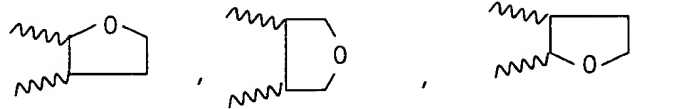
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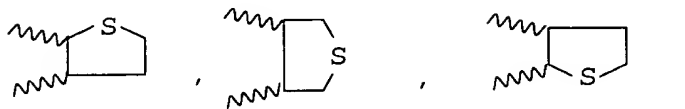
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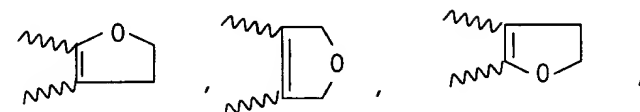
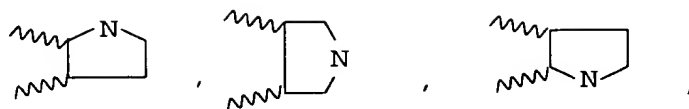
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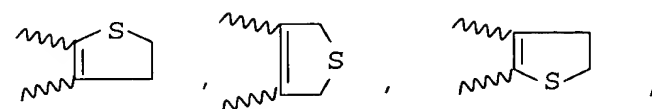
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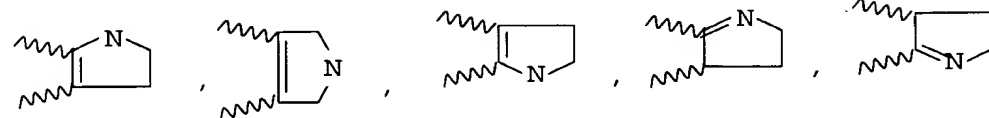
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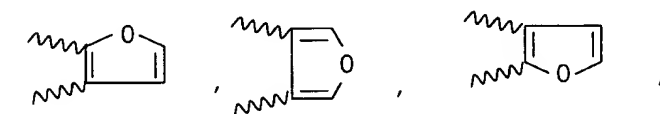
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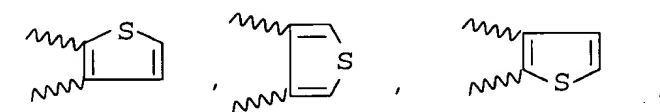
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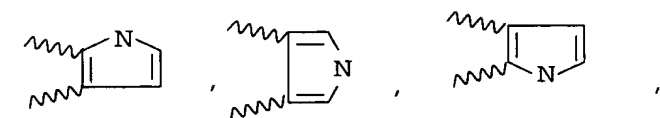
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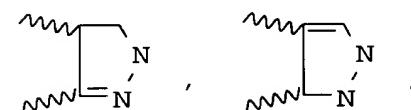
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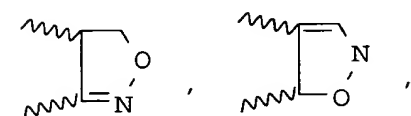
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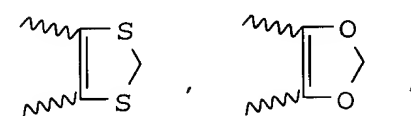
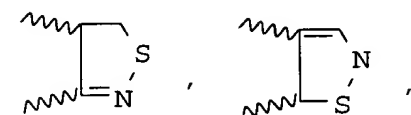
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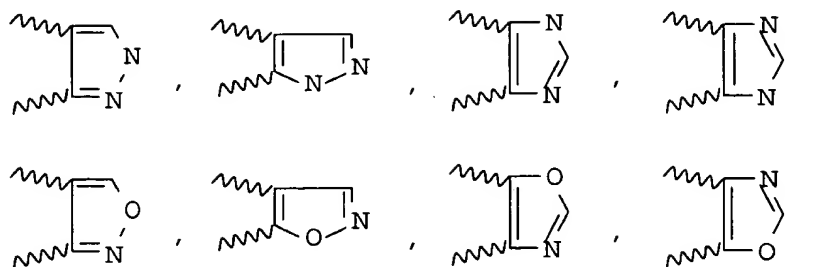


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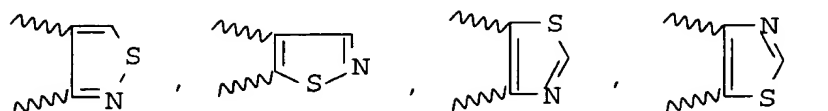


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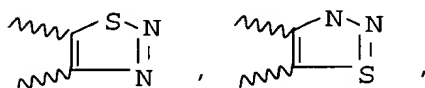
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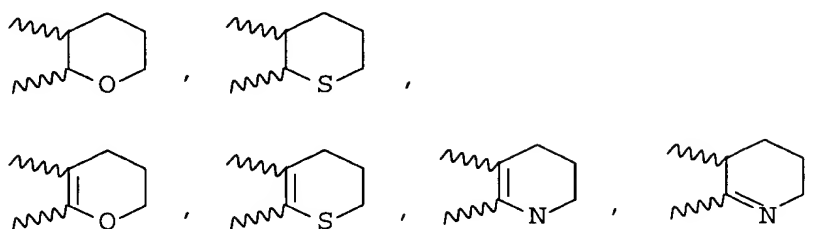
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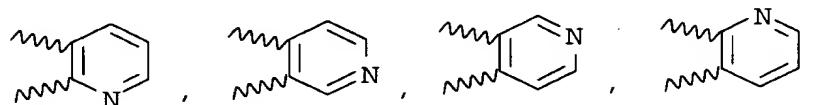
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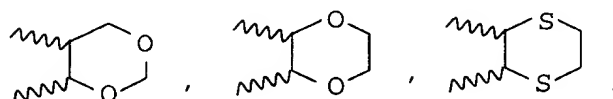
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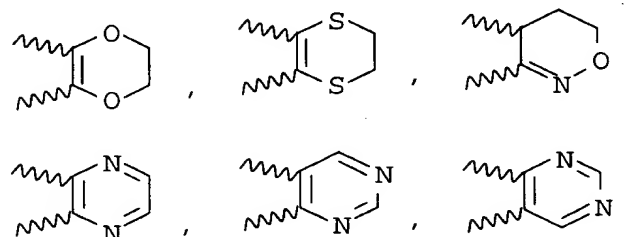
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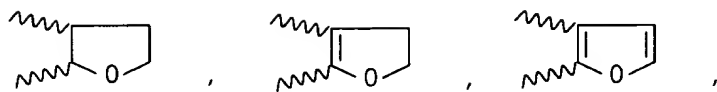
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where the sulfur of the abovementioned heterocycles may be oxidized to $S=O$ or $S(=O)_2$;

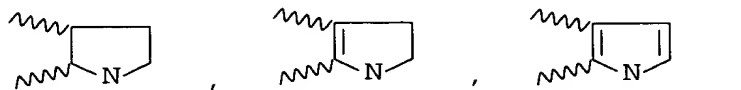
in particular, Y together with the two carbons to which it is
45 attached forms the following heterocycles:

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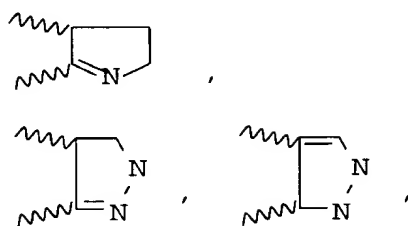
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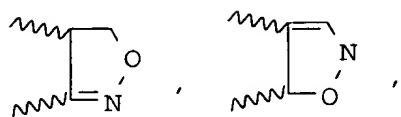
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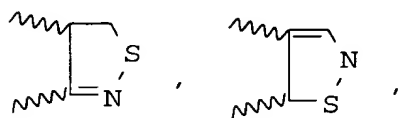
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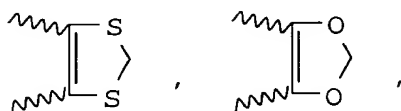
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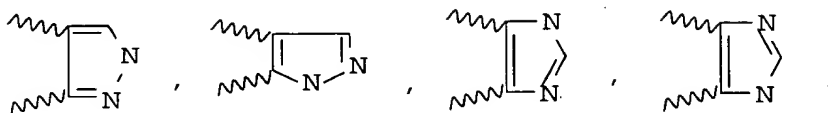
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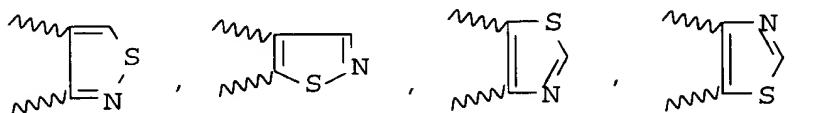
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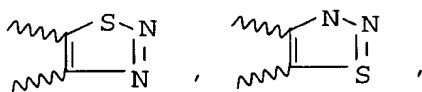
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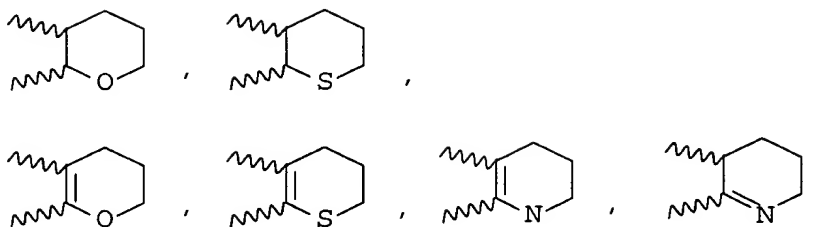


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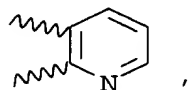


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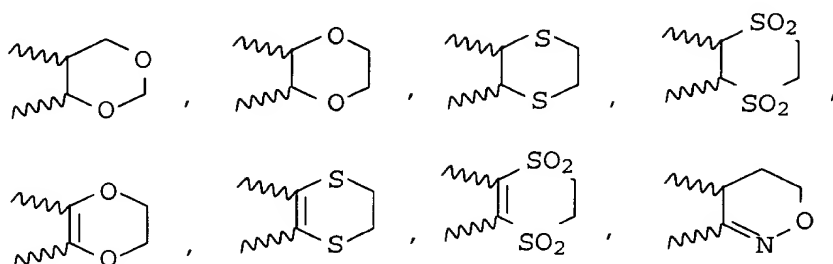
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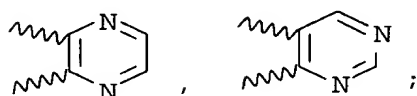
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R^1, R^2 are hydrogen;

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R^3 is C_1 - C_6 -alkyl, such as methyl, ethyl or n-propyl;
in particular methyl;

R^4 is nitro, halogen, C_1 - C_6 -alkyl, C_1 - C_6 -haloalkyl,
 30 C_1 - C_6 -alkoxy, C_1 - C_6 -alkylthio or C_1 - C_6 -alkylsulfonyl;
 in particular nitro, halogen, such as fluorine,
 chlorine or bromine, C_1 - C_6 -haloalkyl such as
 trifluoromethyl, C_1 - C_6 -alkylthio, such as methylthio or
 ethylthio, or C_1 - C_6 -alkylsulfonyl, such as
 35 methylsulfonyl or ethylsulfonyl;
 particularly preferably nitro, chlorine,
 trifluoromethyl, methylthio or methylsulfonyl;

R^5 is hydrogen;

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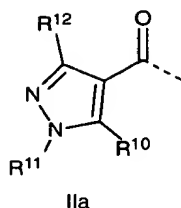
R^6, R^7 are hydrogen or C_1 - C_6 -alkyl, such as methyl or ethyl;
in particular hydrogen or methyl;

1 is 0, 1 or 2;
 45 in particular 0 or 1;

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R⁹ is a radical IIa

5



10 where

R¹⁰ is hydroxyl;

15 R¹¹ is C₁-C₆-alkyl, such as methyl, ethyl, n-propyl, 1-methylethyl, n-butyl, 2-methylpropyl or 1,1-dimethylethyl or cyclopropyl; in particular methyl or ethyl; likewise particularly preferred cyclopropyl;

20 R¹² is hydrogen or C₁-C₆-alkyl, such as methyl, ethyl, n-propyl or 1-methylethyl; in particular hydrogen or methyl.

Very particular preference is given to the compounds Ia where
25

X is oxygen, sulfur, S(=O)₂, CH₂ or a bond;

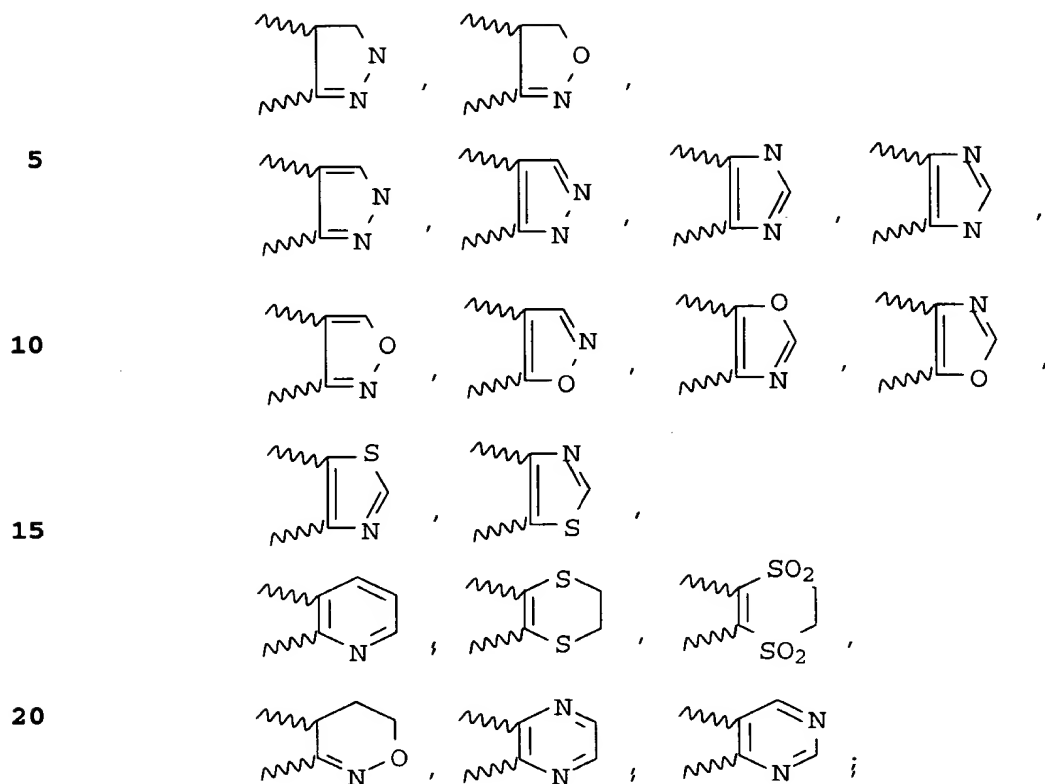
Y together with the two carbons to which it is attached forms the following heterocycles:
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R¹, R² are hydrogen;

25 R³ is C₁-C₄-alkyl;

R⁴ is nitro, halogen, C₁-C₆-alkyl, C₁-C₆-haloalkyl,
C₁-C₆-alkoxy, C₁-C₆-alkylthio or C₁-C₆-alkylsulfonyl;

30 R⁵ is hydrogen or C₁-C₆-alkyl;

1 is 0, 1 or 2;

35 R⁹ is a radical IIa;

R¹⁰ is hydroxyl;

R¹¹ is hydrogen, C₁-C₆-alkyl or cyclopropyl;

40 in particular C₁-C₆-alkyl;

R¹² is hydrogen, C₁-C₆-alkyl or C₁-C₆-haloalkyl.

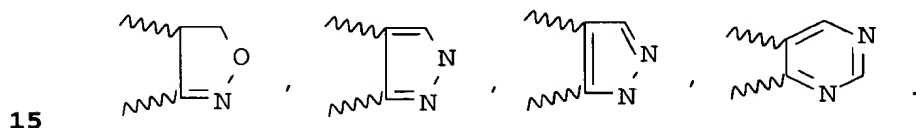
Very particular preference is also given to the compounds Ia
45 where X is oxygen, sulfur or a bond.

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Very particular preference is also given to the compounds Ia where

- Y together with the two carbons to which it is attached
 5 forms a heterocycle selected from the following group:
 dihydropyrazolediyl, dihydroisoxazolediyl,
 pyrazolediyl, isoxazolediyl or pyrimidinediyl.

Most preferably, Y together with the two carbons to which it is
 10 attached forms the following heterocycles:



Very particular preference is also given to the compounds of the formula I where

- 20 R¹, R² are hydrogen;
 R³ is C₁-C₆-alkyl;
 R⁴ is nitro, halogen, C₁-C₆-alkyl, C₁-C₆-haloalkyl,
 25 C₁-C₆-alkoxy, C₁-C₆-alkylthio or C₁-C₆-alkylsulfonyl;
 in particular halogen, C₁-C₆-alkoxy, C₁-C₆-alkylthio or
 C₁-C₆-alkylsulfonyl;
 R⁵ is hydrogen;
 30 l is 0 oder 1.

Very particular preference is also given to the compounds of the formula I where

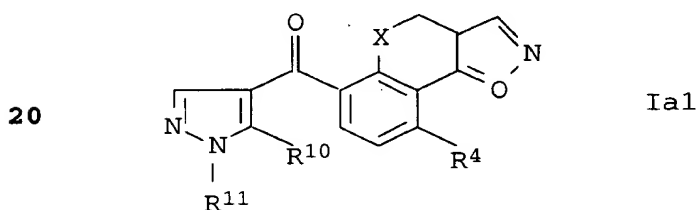
- 35 R¹⁰ is hydroxyl or phenylcarbonyloxy which may be
 unsubstituted or partially or fully halogenated and/or
 may carry one to three of the following radicals:
 40 nitro, cyano, C₁-C₄-alkyl, C₁-C₄-haloalkyl, C₁-C₄-alkoxy
 or C₁-C₄-haloalkoxy;
 in particular hydroxyl;
 R¹¹ is C₁-C₆-alkyl or C₃-C₆-cycloalkyl;
 in particular C₁-C₆-alkyl or
 45 also in particular cyclopropyl;

47

R¹² is hydrogen or C₁-C₆-alkyl;
in particular hydrogen.

Very particular preference is also given to the compounds of the
5 formula Ia1 (\equiv Ia where R¹, R², R⁵ and R¹² = H, l = 0, meaning of
the heterocycle according to structural formula), most
particularly to compounds Ia1.n where the variables X, R⁴, R¹⁰ and
R¹¹ are as defined in Table 1.

The radical definitions of R¹ to R¹², X, Y and l given above and
10 the meaning of the fused heterocycle are of particular importance
for the compounds according to the invention, not only in
combination with one another, but also taken on their own. (For
reasons of clarity, in the formulae Ia1, Ia2 ..., the meaning of
the fused heterocycle is in each case as given in the
15 corresponding structural formula.)



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Table 1:

	n	X	R ⁴	R ¹⁰	R ¹¹
5	1	bond	F	OH	CH ₃
	2	bond	Cl	OH	CH ₃
	3	bond	Br	OH	CH ₃
	4	bond	NO ₂	OH	CH ₃
10	5	bond	SCH ₃	OH	CH ₃
	6	bond	SO ₂ CH ₃	OH	CH ₃
	7	bond	SO ₂ CH ₂ CH ₃	OH	CH ₃
	8	bond	CH ₃	OH	CH ₃
15	9	bond	CF ₃	OH	CH ₃
	10	bond	OCHF ₂	OH	CH ₃
	11	CH ₂	F	OH	CH ₃
	12	CH ₂	Cl	OH	CH ₃
20	13	CH ₂	Br	OH	CH ₃
	14	CH ₂	NO ₂	OH	CH ₃
	15	CH ₂	SCH ₃	OH	CH ₃
	16	CH ₂	SO ₂ CH ₃	OH	CH ₃
25	17	CH ₂	SO ₂ CH ₂ CH ₃	OH	CH ₃
	18	CH ₂	CH ₃	OH	CH ₃
	19	CH ₂	CF ₃	OH	CH ₃
	20	CH ₂	OCHF ₂	OH	CH ₃
30	21	O	F	OH	CH ₃
	22	O	Cl	OH	CH ₃
	23	O	Br	OH	CH ₃
	24	O	NO ₂	OH	CH ₃
35	25	O	SCH ₃	OH	CH ₃
	26	O	SO ₂ CH ₃	OH	CH ₃
	27	O	SO ₂ CH ₂ CH ₃	OH	CH ₃
	28	O	CH ₃	OH	CH ₃
40	29	O	CF ₃	OH	CH ₃
	30	O	OCHF ₂	OH	CH ₃
	31	S	F	OH	CH ₃
	32	S	Cl	OH	CH ₃
45	33	S	Br	OH	CH ₃
	34	S	NO ₂	OH	CH ₃
	35	S	SCH ₃	OH	CH ₃
	36	S	SO ₂ CH ₃	OH	CH ₃
	37	S	SO ₂ CH ₂ CH ₃	OH	CH ₃

	n	X	R ⁴	R ¹⁰	R ¹¹
5	38	S	CH ₃	OH	CH ₃
	39	S	CF ₃	OH	CH ₃
	40	S	OCHF ₂	OH	CH ₃
	41	SO ₂	F	OH	CH ₃
	42	SO ₂	Cl	OH	CH ₃
10	43	SO ₂	Br	OH	CH ₃
	44	SO ₂	NO ₂	OH	CH ₃
	45	SO ₂	SCH ₃	OH	CH ₃
	46	SO ₂	SO ₂ CH ₃	OH	CH ₃
	47	SO ₂	SO ₂ CH ₂ CH ₃	OH	CH ₃
15	48	SO ₂	CH ₃	OH	CH ₃
	49	SO ₂	CF ₃	OH	CH ₃
	50	SO ₂	OCHF ₂	OH	CH ₃
	51	bond	F	OH	CH ₂ CH ₃
	52	bond	Cl	OH	CH ₂ CH ₃
20	53	bond	Br	OH	CH ₂ CH ₃
	54	bond	NO ₂	OH	CH ₂ CH ₃
	55	bond	SCH ₃	OH	CH ₂ CH ₃
	56	bond	SO ₂ CH ₃	OH	CH ₂ CH ₃
	57	bond	SO ₂ CH ₂ CH ₃	OH	CH ₂ CH ₃
25	58	bond	CH ₃	OH	CH ₂ CH ₃
	59	bond	CF ₃	OH	CH ₂ CH ₃
	60	bond	OCHF ₂	OH	CH ₂ CH ₃
	61	CH ₂	F	OH	CH ₂ CH ₃
	62	CH ₂	Cl	OH	CH ₂ CH ₃
30	63	CH ₂	Br	OH	CH ₂ CH ₃
	64	CH ₂	NO ₂	OH	CH ₂ CH ₃
	65	CH ₂	SCH ₃	OH	CH ₂ CH ₃
	66	CH ₂	SO ₂ CH ₃	OH	CH ₂ CH ₃
	67	CH ₂	SO ₂ CH ₂ CH ₃	OH	CH ₂ CH ₃
35	68	CH ₂	CH ₃	OH	CH ₂ CH ₃
	69	CH ₂	CF ₃	OH	CH ₂ CH ₃
	70	CH ₂	OCHF ₂	OH	CH ₂ CH ₃
	71	O	F	OH	CH ₂ CH ₃
	72	O	Cl	OH	CH ₂ CH ₃
40	73	O	Br	OH	CH ₂ CH ₃
	74	O	NO ₂	OH	CH ₂ CH ₃
	75	O	SCH ₃	OH	CH ₂ CH ₃
	76	O	SO ₂ CH ₃	OH	CH ₂ CH ₃
	76	O	SO ₂ CH ₃	OH	CH ₂ CH ₃

50

	n	X	R ⁴	R ¹⁰	R ¹¹
5	77	O	SO ₂ CH ₂ CH ₃	OH	CH ₂ CH ₃
	78	O	CH ₃	OH	CH ₂ CH ₃
	79	O	CF ₃	OH	CH ₂ CH ₃
	80	O	OCHF ₂	OH	CH ₂ CH ₃
	81	S	F	OH	CH ₂ CH ₃
10	82	S	Cl	OH	CH ₂ CH ₃
	83	S	Br	OH	CH ₂ CH ₃
	84	S	NO ₂	OH	CH ₂ CH ₃
	85	S	SCH ₃	OH	CH ₂ CH ₃
	86	S	SO ₂ CH ₃	OH	CH ₂ CH ₃
15	87	S	SO ₂ CH ₂ CH ₃	OH	CH ₂ CH ₃
	88	S	CH ₃	OH	CH ₂ CH ₃
	89	S	CF ₃	OH	CH ₂ CH ₃
	90	S	OCHF ₂	OH	CH ₂ CH ₃
	91	SO ₂	F	OH	CH ₂ CH ₃
20	92	SO ₂	Cl	OH	CH ₂ CH ₃
	93	SO ₂	Br	OH	CH ₂ CH ₃
	94	SO ₂	NO ₂	OH	CH ₂ CH ₃
	95	SO ₂	SCH ₃	OH	CH ₂ CH ₃
	96	SO ₂	SO ₂ CH ₃	OH	CH ₂ CH ₃
25	97	SO ₂	SO ₂ CH ₂ CH ₃	OH	CH ₂ CH ₃
	98	SO ₂	CH ₃	OH	CH ₂ CH ₃
	99	SO ₂	CF ₃	OH	CH ₂ CH ₃
	100	SO ₂	OCHF ₂	OH	CH ₂ CH ₃
	101	bond	F	OCOC ₆ H ₅	CH ₃
30	102	bond	Cl	OCOC ₆ H ₅	CH ₃
	103	bond	Br	OCOC ₆ H ₅	CH ₃
	104	bond	NO ₂	OCOC ₆ H ₅	CH ₃
	105	bond	SCH ₃	OCOC ₆ H ₅	CH ₃
	106	bond	SO ₂ CH ₃	OCOC ₆ H ₅	CH ₃
35	107	bond	SO ₂ CH ₂ CH ₃	OCOC ₆ H ₅	CH ₃
	108	bond	CH ₃	OCOC ₆ H ₅	CH ₃
	109	bond	CF ₃	OCOC ₆ H ₅	CH ₃
	110	bond	OCHF ₂	OCOC ₆ H ₅	CH ₃
	111	CH ₂	F	OCOC ₆ H ₅	CH ₃
40	112	CH ₂	Cl	OCOC ₆ H ₅	CH ₃
	113	CH ₂	Br	OCOC ₆ H ₅	CH ₃
	114	CH ₂	NO ₂	OCOC ₆ H ₅	CH ₃
	115	CH ₂	SCH ₃	OCOC ₆ H ₅	CH ₃

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	n	X	R ⁴	R ¹⁰	R ¹¹
5	116	CH ₂	SO ₂ CH ₃	OCOC ₆ H ₅	CH ₃
	117	CH ₂	SO ₂ CH ₂ CH ₃	OCOC ₆ H ₅	CH ₃
	118	CH ₂	CH ₃	OCOC ₆ H ₅	CH ₃
	119	CH ₂	CF ₃	OCOC ₆ H ₅	CH ₃
	120	CH ₂	OCHF ₂	OCOC ₆ H ₅	CH ₃
10	121	O	F	OCOC ₆ H ₅	CH ₃
	122	O	Cl	OCOC ₆ H ₅	CH ₃
	123	O	Br	OCOC ₆ H ₅	CH ₃
	124	O	NO ₂	OCOC ₆ H ₅	CH ₃
	125	O	SCH ₃	OCOC ₆ H ₅	CH ₃
15	126	O	SO ₂ CH ₃	OCOC ₆ H ₅	CH ₃
	127	O	SO ₂ CH ₂ CH ₃	OCOC ₆ H ₅	CH ₃
	128	O	CH ₃	OCOC ₆ H ₅	CH ₃
	129	O	CF ₃	OCOC ₆ H ₅	CH ₃
	130	O	OCHF ₂	OCOC ₆ H ₅	CH ₃
20	131	S	F	OCOC ₆ H ₅	CH ₃
	132	S	Cl	OCOC ₆ H ₅	CH ₃
	133	S	Br	OCOC ₆ H ₅	CH ₃
	134	S	NO ₂	OCOC ₆ H ₅	CH ₃
	135	S	SCH ₃	OCOC ₆ H ₅	CH ₃
25	136	S	SO ₂ CH ₃	OCOC ₆ H ₅	CH ₃
	137	S	SO ₂ CH ₂ CH ₃	OCOC ₆ H ₅	CH ₃
	138	S	CH ₃	OCOC ₆ H ₅	CH ₃
	139	S	CF ₃	OCOC ₆ H ₅	CH ₃
	140	S	OCHF ₂	OCOC ₆ H ₅	CH ₃
30	141	SO ₂	F	OCOC ₆ H ₅	CH ₃
	142	SO ₂	Cl	OCOC ₆ H ₅	CH ₃
	143	SO ₂	Br	OCOC ₆ H ₅	CH ₃
	144	SO ₂	NO ₂	OCOC ₆ H ₅	CH ₃
	145	SO ₂	SCH ₃	OCOC ₆ H ₅	CH ₃
35	146	SO ₂	SO ₂ CH ₃	OCOC ₆ H ₅	CH ₃
	147	SO ₂	SO ₂ CH ₂ CH ₃	OCOC ₆ H ₅	CH ₃
	148	SO ₂	CH ₃	OCOC ₆ H ₅	CH ₃
	149	SO ₂	CF ₃	OCOC ₆ H ₅	CH ₃
	150	SO ₂	OCHF ₂	OCOC ₆ H ₅	CH ₃
40	151	bond	F	OCOC ₆ H ₅	CH ₂ CH ₃
	152	bond	Cl	OCOC ₆ H ₅	CH ₂ CH ₃
	153	bond	Br	OCOC ₆ H ₅	CH ₂ CH ₃
	154	bond	NO ₂	OCOC ₆ H ₅	CH ₂ CH ₃

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	n	X	R ⁴	R ¹⁰	R ¹¹
5	155	bond	SCH ₃	OCOC ₆ H ₅	CH ₂ CH ₃
	156	bond	SO ₂ CH ₃	OCOC ₆ H ₅	CH ₂ CH ₃
	157	bond	SO ₂ CH ₂ CH ₃	OCOC ₆ H ₅	CH ₂ CH ₃
	158	bond	CH ₃	OCOC ₆ H ₅	CH ₂ CH ₃
	159	bond	CF ₃	OCOC ₆ H ₅	CH ₂ CH ₃
10	160	bond	OCHF ₂	OCOC ₆ H ₅	CH ₂ CH ₃
	161	CH ₂	F	OCOC ₆ H ₅	CH ₂ CH ₃
	162	CH ₂	Cl	OCOC ₆ H ₅	CH ₂ CH ₃
	163	CH ₂	Br	OCOC ₆ H ₅	CH ₂ CH ₃
	164	CH ₂	NO ₂	OCOC ₆ H ₅	CH ₂ CH ₃
15	165	CH ₂	SCH ₃	OCOC ₆ H ₅	CH ₂ CH ₃
	166	CH ₂	SO ₂ CH ₃	OCOC ₆ H ₅	CH ₂ CH ₃
	167	CH ₂	SO ₂ CH ₂ CH ₃	OCOC ₆ H ₅	CH ₂ CH ₃
	168	CH ₂	CH ₃	OCOC ₆ H ₅	CH ₂ CH ₃
	169	CH ₂	CF ₃	OCOC ₆ H ₅	CH ₂ CH ₃
20	170	CH ₂	OCHF ₂	OCOC ₆ H ₅	CH ₂ CH ₃
	171	O	F	OCOC ₆ H ₅	CH ₂ CH ₃
	172	O	Cl	OCOC ₆ H ₅	CH ₂ CH ₃
	173	O	Br	OCOC ₆ H ₅	CH ₂ CH ₃
	174	O	NO ₂	OCOC ₆ H ₅	CH ₂ CH ₃
25	175	O	SCH ₃	OCOC ₆ H ₅	CH ₂ CH ₃
	176	O	SO ₂ CH ₃	OCOC ₆ H ₅	CH ₂ CH ₃
	177	O	SO ₂ CH ₂ CH ₃	OCOC ₆ H ₅	CH ₂ CH ₃
	178	O	CH ₃	OCOC ₆ H ₅	CH ₂ CH ₃
	179	O	CF ₃	OCOC ₆ H ₅	CH ₂ CH ₃
30	180	O	OCHF ₂	OCOC ₆ H ₅	CH ₂ CH ₃
	181	S	F	OCOC ₆ H ₅	CH ₂ CH ₃
	182	S	Cl	OCOC ₆ H ₅	CH ₂ CH ₃
	183	S	Br	OCOC ₆ H ₅	CH ₂ CH ₃
	184	S	NO ₂	OCOC ₆ H ₅	CH ₂ CH ₃
35	185	S	SCH ₃	OCOC ₆ H ₅	CH ₂ CH ₃
	186	S	SO ₂ CH ₃	OCOC ₆ H ₅	CH ₂ CH ₃
	187	S	SO ₂ CH ₂ CH ₃	OCOC ₆ H ₅	CH ₂ CH ₃
	188	S	CH ₃	OCOC ₆ H ₅	CH ₂ CH ₃
	189	S	CF ₃	OCOC ₆ H ₅	CH ₂ CH ₃
40	190	S	OCHF ₂	OCOC ₆ H ₅	CH ₂ CH ₃
	191	SO ₂	F	OCOC ₆ H ₅	CH ₂ CH ₃
	192	SO ₂	Cl	OCOC ₆ H ₅	CH ₂ CH ₃
	193	SO ₂	Br	OCOC ₆ H ₅	CH ₂ CH ₃
	193	SO ₂	Br	OCOC ₆ H ₅	CH ₂ CH ₃

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	n	X	R ⁴	R ¹⁰	R ¹¹
5	194	SO ₂	NO ₂	OCOC ₆ H ₅	CH ₂ CH ₃
	195	SO ₂	SCH ₃	OCOC ₆ H ₅	CH ₂ CH ₃
	196	SO ₂	SO ₂ CH ₃	OCOC ₆ H ₅	CH ₂ CH ₃
	197	SO ₂	SO ₂ CH ₂ CH ₃	OCOC ₆ H ₅	CH ₂ CH ₃
	198	SO ₂	CH ₃	OCOC ₆ H ₅	CH ₂ CH ₃
10	199	SO ₂	CF ₃	OCOC ₆ H ₅	CH ₂ CH ₃
	200	SO ₂	OCHF ₂	OCOC ₆ H ₅	CH ₂ CH ₃
	201	bond	F	OCOC(CH ₃) ₃	CH ₃
	202	bond	Cl	OCOC(CH ₃) ₃	CH ₃
	203	bond	Br	OCOC(CH ₃) ₃	CH ₃
15	204	bond	NO ₂	OCOC(CH ₃) ₃	CH ₃
	205	bond	SCH ₃	OCOC(CH ₃) ₃	CH ₃
	206	bond	SO ₂ CH ₃	OCOC(CH ₃) ₃	CH ₃
	207	bond	SO ₂ CH ₂ CH ₃	OCOC(CH ₃) ₃	CH ₃
	208	bond	CH ₃	OCOC(CH ₃) ₃	CH ₃
20	209	bond	CF ₃	OCOC(CH ₃) ₃	CH ₃
	210	bond	OCHF ₂	OCOC(CH ₃) ₃	CH ₃
	211	CH ₂	F	OCOC(CH ₃) ₃	CH ₃
	212	CH ₂	Cl	OCOC(CH ₃) ₃	CH ₃
	213	CH ₂	Br	OCOC(CH ₃) ₃	CH ₃
25	214	CH ₂	NO ₂	OCOC(CH ₃) ₃	CH ₃
	215	CH ₂	SCH ₃	OCOC(CH ₃) ₃	CH ₃
	216	CH ₂	SO ₂ CH ₃	OCOC(CH ₃) ₃	CH ₃
	217	CH ₂	SO ₂ CH ₂ CH ₃	OCOC(CH ₃) ₃	CH ₃
	218	CH ₂	CH ₃	OCOC(CH ₃) ₃	CH ₃
30	219	CH ₂	CF ₃	OCOC(CH ₃) ₃	CH ₃
	220	CH ₂	OCHF ₂	OCOC(CH ₃) ₃	CH ₃
	221	O	F	OCOC(CH ₃) ₃	CH ₃
	222	O	Cl	OCOC(CH ₃) ₃	CH ₃
	223	O	Br	OCOC(CH ₃) ₃	CH ₃
35	224	O	NO ₂	OCOC(CH ₃) ₃	CH ₃
	225	O	SCH ₃	OCOC(CH ₃) ₃	CH ₃
	226	O	SO ₂ CH ₃	OCOC(CH ₃) ₃	CH ₃
	227	O	SO ₂ CH ₂ CH ₃	OCOC(CH ₃) ₃	CH ₃
	228	O	CH ₃	OCOC(CH ₃) ₃	CH ₃
40	229	O	CF ₃	OCOC(CH ₃) ₃	CH ₃
	230	O	OCHF ₂	OCOC(CH ₃) ₃	CH ₃
	231	S	F	OCOC(CH ₃) ₃	CH ₃
	232	S	Cl	OCOC(CH ₃) ₃	CH ₃
	232	S	Cl	OCOC(CH ₃) ₃	CH ₃

	n	X	R ⁴	R ¹⁰	R ¹¹
5	233	S	Br	OCOC(CH ₃) ₃	CH ₃
	234	S	NO ₂	OCOC(CH ₃) ₃	CH ₃
	235	S	SCH ₃	OCOC(CH ₃) ₃	CH ₃
	236	S	SO ₂ CH ₃	OCOC(CH ₃) ₃	CH ₃
	237	S	SO ₂ CH ₂ CH ₃	OCOC(CH ₃) ₃	CH ₃
10	238	S	CH ₃	OCOC(CH ₃) ₃	CH ₃
	239	S	CF ₃	OCOC(CH ₃) ₃	CH ₃
	240	S	OCHF ₂	OCOC(CH ₃) ₃	CH ₃
	241	SO ₂	F	OCOC(CH ₃) ₃	CH ₃
	242	SO ₂	Cl	OCOC(CH ₃) ₃	CH ₃
15	243	SO ₂	Br	OCOC(CH ₃) ₃	CH ₃
	244	SO ₂	NO ₂	OCOC(CH ₃) ₃	CH ₃
	245	SO ₂	SCH ₃	OCOC(CH ₃) ₃	CH ₃
	246	SO ₂	SO ₂ CH ₃	OCOC(CH ₃) ₃	CH ₃
	247	SO ₂	SO ₂ CH ₂ CH ₃	OCOC(CH ₃) ₃	CH ₃
20	248	SO ₂	CH ₃	OCOC(CH ₃) ₃	CH ₃
	249	SO ₂	CF ₃	OCOC(CH ₃) ₃	CH ₃
	250	SO ₂	OCHF ₂	OCOC(CH ₃) ₃	CH ₃
	251	bond	F	OCOC(CH ₃) ₃	CH ₂ CH ₃
	252	bond	Cl	OCOC(CH ₃) ₃	CH ₂ CH ₃
25	253	bond	Br	OCOC(CH ₃) ₃	CH ₂ CH ₃
	254	bond	NO ₂	OCOC(CH ₃) ₃	CH ₂ CH ₃
	255	bond	SCH ₃	OCOC(CH ₃) ₃	CH ₂ CH ₃
	256	bond	SO ₂ CH ₃	OCOC(CH ₃) ₃	CH ₂ CH ₃
	257	bond	SO ₂ CH ₂ CH ₃	OCOC(CH ₃) ₃	CH ₂ CH ₃
30	258	bond	CH ₃	OCOC(CH ₃) ₃	CH ₂ CH ₃
	259	bond	CF ₃	OCOC(CH ₃) ₃	CH ₂ CH ₃
	260	bond	OCHF ₂	OCOC(CH ₃) ₃	CH ₂ CH ₃
	261	CH ₂	F	OCOC(CH ₃) ₃	CH ₂ CH ₃
	262	CH ₂	Cl	OCOC(CH ₃) ₃	CH ₂ CH ₃
35	263	CH ₂	Br	OCOC(CH ₃) ₃	CH ₂ CH ₃
	264	CH ₂	NO ₂	OCOC(CH ₃) ₃	CH ₂ CH ₃
	265	CH ₂	SCH ₃	OCOC(CH ₃) ₃	CH ₂ CH ₃
	266	CH ₂	SO ₂ CH ₃	OCOC(CH ₃) ₃	CH ₂ CH ₃
	267	CH ₂	SO ₂ CH ₂ CH ₃	OCOC(CH ₃) ₃	CH ₂ CH ₃
40	268	CH ₂	CH ₃	OCOC(CH ₃) ₃	CH ₂ CH ₃
	269	CH ₂	CF ₃	OCOC(CH ₃) ₃	CH ₂ CH ₃
	270	CH ₂	OCHF ₂	OCOC(CH ₃) ₃	CH ₂ CH ₃
	271	O	F	OCOC(CH ₃) ₃	CH ₂ CH ₃

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	n	X	R ⁴	R ¹⁰	R ¹¹
5	272	O	Cl	OCOC(CH ₃) ₃	CH ₂ CH ₃
	273	O	Br	OCOC(CH ₃) ₃	CH ₂ CH ₃
	274	O	NO ₂	OCOC(CH ₃) ₃	CH ₂ CH ₃
	275	O	SCH ₃	OCOC(CH ₃) ₃	CH ₂ CH ₃
	276	O	SO ₂ CH ₃	OCOC(CH ₃) ₃	CH ₂ CH ₃
10	277	O	SO ₂ CH ₂ CH ₃	OCOC(CH ₃) ₃	CH ₂ CH ₃
	278	O	CH ₃	OCOC(CH ₃) ₃	CH ₂ CH ₃
	279	O	CF ₃	OCOC(CH ₃) ₃	CH ₂ CH ₃
	280	O	OCHF ₂	OCOC(CH ₃) ₃	CH ₂ CH ₃
	281	S	F	OCOC(CH ₃) ₃	CH ₂ CH ₃
15	282	S	Cl	OCOC(CH ₃) ₃	CH ₂ CH ₃
	283	S	Br	OCOC(CH ₃) ₃	CH ₂ CH ₃
	284	S	NO ₂	OCOC(CH ₃) ₃	CH ₂ CH ₃
	285	S	SCH ₃	OCOC(CH ₃) ₃	CH ₂ CH ₃
	286	S	SO ₂ CH ₃	OCOC(CH ₃) ₃	CH ₂ CH ₃
20	287	S	SO ₂ CH ₂ CH ₃	OCOC(CH ₃) ₃	CH ₂ CH ₃
	288	S	CH ₃	OCOC(CH ₃) ₃	CH ₂ CH ₃
	289	S	CF ₃	OCOC(CH ₃) ₃	CH ₂ CH ₃
	290	S	OCHF ₂	OCOC(CH ₃) ₃	CH ₂ CH ₃
	291	SO ₂	F	OCOC(CH ₃) ₃	CH ₂ CH ₃
25	292	SO ₂	Cl	OCOC(CH ₃) ₃	CH ₂ CH ₃
	293	SO ₂	Br	OCOC(CH ₃) ₃	CH ₂ CH ₃
	294	SO ₂	NO ₂	OCOC(CH ₃) ₃	CH ₂ CH ₃
	295	SO ₂	SCH ₃	OCOC(CH ₃) ₃	CH ₂ CH ₃
	296	SO ₂	SO ₂ CH ₃	OCOC(CH ₃) ₃	CH ₂ CH ₃
30	297	SO ₂	SO ₂ CH ₂ CH ₃	OCOC(CH ₃) ₃	CH ₂ CH ₃
	298	SO ₂	CH ₃	OCOC(CH ₃) ₃	CH ₂ CH ₃
	299	SO ₂	CF ₃	OCOC(CH ₃) ₃	CH ₂ CH ₃
	300	SO ₂	OCHF ₂	OCOC(CH ₃) ₃	CH ₂ CH ₃
	301	bond	F	OCOSCH ₃	CH ₃
35	302	bond	Cl	OCOSCH ₃	CH ₃
	303	bond	Br	OCOSCH ₃	CH ₃
	304	bond	NO ₂	OCOSCH ₃	CH ₃
	305	bond	SCH ₃	OCOSCH ₃	CH ₃
	306	bond	SO ₂ CH ₃	OCOSCH ₃	CH ₃
40	307	bond	SO ₂ CH ₂ CH ₃	OCOSCH ₃	CH ₃
	308	bond	CH ₃	OCOSCH ₃	CH ₃
	309	bond	CF ₃	OCOSCH ₃	CH ₃
	310	bond	OCHF ₂	OCOSCH ₃	CH ₃

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	n	X	R ⁴	R ¹⁰	R ¹¹
5	311	CH ₂	F	OCOSCH ₃	CH ₃
	312	CH ₂	Cl	OCOSCH ₃	CH ₃
	313	CH ₂	Br	OCOSCH ₃	CH ₃
	314	CH ₂	NO ₂	OCOSCH ₃	CH ₃
	315	CH ₂	SCH ₃	OCOSCH ₃	CH ₃
10	316	CH ₂	SO ₂ CH ₃	OCOSCH ₃	CH ₃
	317	CH ₂	SO ₂ CH ₂ CH ₃	OCOSCH ₃	CH ₃
	318	CH ₂	CH ₃	OCOSCH ₃	CH ₃
	319	CH ₂	CF ₃	OCOSCH ₃	CH ₃
	320	CH ₂	OCHF ₂	OCOSCH ₃	CH ₃
15	321	O	F	OCOSCH ₃	CH ₃
	322	O	Cl	OCOSCH ₃	CH ₃
	323	O	Br	OCOSCH ₃	CH ₃
	324	O	NO ₂	OCOSCH ₃	CH ₃
	325	O	SCH ₃	OCOSCH ₃	CH ₃
20	326	O	SO ₂ CH ₃	OCOSCH ₃	CH ₃
	327	O	SO ₂ CH ₂ CH ₃	OCOSCH ₃	CH ₃
	328	O	CH ₃	OCOSCH ₃	CH ₃
	329	O	CF ₃	OCOSCH ₃	CH ₃
	330	O	OCHF ₂	OCOSCH ₃	CH ₃
25	331	S	F	OCOSCH ₃	CH ₃
	332	S	Cl	OCOSCH ₃	CH ₃
	333	S	Br	OCOSCH ₃	CH ₃
	334	S	NO ₂	OCOSCH ₃	CH ₃
	335	S	SCH ₃	OCOSCH ₃	CH ₃
30	336	S	SO ₂ CH ₃	OCOSCH ₃	CH ₃
	337	S	SO ₂ CH ₂ CH ₃	OCOSCH ₃	CH ₃
	338	S	CH ₃	OCOSCH ₃	CH ₃
	339	S	CF ₃	OCOSCH ₃	CH ₃
	340	S	OCHF ₂	OCOSCH ₃	CH ₃
35	341	SO ₂	F	OCOSCH ₃	CH ₃
	342	SO ₂	Cl	OCOSCH ₃	CH ₃
	343	SO ₂	Br	OCOSCH ₃	CH ₃
	344	SO ₂	NO ₂	OCOSCH ₃	CH ₃
	345	SO ₂	SCH ₃	OCOSCH ₃	CH ₃
40	346	SO ₂	SO ₂ CH ₃	OCOSCH ₃	CH ₃
	347	SO ₂	SO ₂ CH ₂ CH ₃	OCOSCH ₃	CH ₃
	348	SO ₂	CH ₃	OCOSCH ₃	CH ₃
	349	SO ₂	CF ₃	OCOSCH ₃	CH ₃
	349	SO ₂	CF ₃	OCOSCH ₃	CH ₃

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	n	X	R ⁴	R ¹⁰	R ¹¹
	350	SO ₂	OCHF ₂	OCOSCH ₃	CH ₃
	351	bond	F	OCOSCH ₃	CH ₂ CH ₃
5	352	bond	Cl	OCOSCH ₃	CH ₂ CH ₃
	353	bond	Br	OCOSCH ₃	CH ₂ CH ₃
	354	bond	NO ₂	OCOSCH ₃	CH ₂ CH ₃
	355	bond	SCH ₃	OCOSCH ₃	CH ₂ CH ₃
10	356	bond	SO ₂ CH ₃	OCOSCH ₃	CH ₂ CH ₃
	357	bond	SO ₂ CH ₂ CH ₃	OCOSCH ₃	CH ₂ CH ₃
	358	bond	CH ₃	OCOSCH ₃	CH ₂ CH ₃
	359	bond	CF ₃	OCOSCH ₃	CH ₂ CH ₃
	360	bond	OCHF ₂	OCOSCH ₃	CH ₂ CH ₃
15	361	CH ₂	F	OCOSCH ₃	CH ₂ CH ₃
	362	CH ₂	Cl	OCOSCH ₃	CH ₂ CH ₃
	363	CH ₂	Br	OCOSCH ₃	CH ₂ CH ₃
	364	CH ₂	NO ₂	OCOSCH ₃	CH ₂ CH ₃
20	365	CH ₂	SCH ₃	OCOSCH ₃	CH ₂ CH ₃
	366	CH ₂	SO ₂ CH ₃	OCOSCH ₃	CH ₂ CH ₃
	367	CH ₂	SO ₂ CH ₂ CH ₃	OCOSCH ₃	CH ₂ CH ₃
	368	CH ₂	CH ₃	OCOSCH ₃	CH ₂ CH ₃
	369	CH ₂	CF ₃	OCOSCH ₃	CH ₂ CH ₃
25	370	CH ₂	OCHF ₂	OCOSCH ₃	CH ₂ CH ₃
	371	O	F	OCOSCH ₃	CH ₂ CH ₃
	372	O	Cl	OCOSCH ₃	CH ₂ CH ₃
	373	O	Br	OCOSCH ₃	CH ₂ CH ₃
30	374	O	NO ₂	OCOSCH ₃	CH ₂ CH ₃
	375	O	SCH ₃	OCOSCH ₃	CH ₂ CH ₃
	376	O	SO ₂ CH ₃	OCOSCH ₃	CH ₂ CH ₃
	377	O	SO ₂ CH ₂ CH ₃	OCOSCH ₃	CH ₂ CH ₃
35	378	O	CH ₃	OCOSCH ₃	CH ₂ CH ₃
	379	O	CF ₃	OCOSCH ₃	CH ₂ CH ₃
	380	O	OCHF ₂	OCOSCH ₃	CH ₂ CH ₃
	381	S	F	OCOSCH ₃	CH ₂ CH ₃
40	382	S	Cl	OCOSCH ₃	CH ₂ CH ₃
	383	S	Br	OCOSCH ₃	CH ₂ CH ₃
	384	S	NO ₂	OCOSCH ₃	CH ₂ CH ₃
	385	S	SCH ₃	OCOSCH ₃	CH ₂ CH ₃
	386	S	SO ₂ CH ₃	OCOSCH ₃	CH ₂ CH ₃
45	387	S	SO ₂ CH ₂ CH ₃	OCOSCH ₃	CH ₂ CH ₃
	388	S	CH ₃	OCOSCH ₃	CH ₂ CH ₃

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	n	X	R ⁴	R ¹⁰	R ¹¹
	389	S	CF ₃	OCOSCH ₃	CH ₂ CH ₃
	390	S	OCHF ₂	OCOSCH ₃	CH ₂ CH ₃
5	391	SO ₂	F	OCOSCH ₃	CH ₂ CH ₃
	392	SO ₂	Cl	OCOSCH ₃	CH ₂ CH ₃
	393	SO ₂	Br	OCOSCH ₃	CH ₂ CH ₃
	394	SO ₂	NO ₂	OCOSCH ₃	CH ₂ CH ₃
10	395	SO ₂	SCH ₃	OCOSCH ₃	CH ₂ CH ₃
	396	SO ₂	SO ₂ CH ₃	OCOSCH ₃	CH ₂ CH ₃
	397	SO ₂	SO ₂ CH ₂ CH ₃	OCOSCH ₃	CH ₂ CH ₃
	398	SO ₂	CH ₃	OCOSCH ₃	CH ₂ CH ₃
	399	SO ₂	CF ₃	OCOSCH ₃	CH ₂ CH ₃
15	400	SO ₂	OCHF ₂	OCOSCH ₃	CH ₂ CH ₃
	401	bond	F	OCH ₃	CH ₃
	402	bond	Cl	OCH ₃	CH ₃
	403	bond	Br	OCH ₃	CH ₃
20	404	bond	NO ₂	OCH ₃	CH ₃
	405	bond	SCH ₃	OCH ₃	CH ₃
	406	bond	SO ₂ CH ₃	OCH ₃	CH ₃
	407	bond	SO ₂ CH ₂ CH ₃	OCH ₃	CH ₃
25	408	bond	CH ₃	OCH ₃	CH ₃
	409	bond	CF ₃	OCH ₃	CH ₃
	410	bond	OCHF ₂	OCH ₃	CH ₃
	411	CH ₂	F	OCH ₃	CH ₃
	412	CH ₂	Cl	OCH ₃	CH ₃
30	413	CH ₂	Br	OCH ₃	CH ₃
	414	CH ₂	NO ₂	OCH ₃	CH ₃
	415	CH ₂	SCH ₃	OCH ₃	CH ₃
	416	CH ₂	SO ₂ CH ₃	OCH ₃	CH ₃
35	417	CH ₂	SO ₂ CH ₂ CH ₃	OCH ₃	CH ₃
	418	CH ₂	CH ₃	OCH ₃	CH ₃
	419	CH ₂	CF ₃	OCH ₃	CH ₃
	420	CH ₂	OCHF ₂	OCH ₃	CH ₃
40	421	O	F	OCH ₃	CH ₃
	422	O	Cl	OCH ₃	CH ₃
	423	O	Br	OCH ₃	CH ₃
	424	O	NO ₂	OCH ₃	CH ₃
	425	O	SCH ₃	OCH ₃	CH ₃
45	426	O	SO ₂ CH ₃	OCH ₃	CH ₃
	427	O	SO ₂ CH ₂ CH ₃	OCH ₃	CH ₃

	n	X	R ⁴	R ¹⁰	R ¹¹
5	428	O	CH ₃	OCH ₃	CH ₃
	429	O	CF ₃	OCH ₃	CH ₃
	430	O	OCHF ₂	OCH ₃	CH ₃
	431	S	F	OCH ₃	CH ₃
	432	S	Cl	OCH ₃	CH ₃
10	433	S	Br	OCH ₃	CH ₃
	434	S	NO ₂	OCH ₃	CH ₃
	435	S	SCH ₃	OCH ₃	CH ₃
	436	S	SO ₂ CH ₃	OCH ₃	CH ₃
	437	S	SO ₂ CH ₂ CH ₃	OCH ₃	CH ₃
15	438	S	CH ₃	OCH ₃	CH ₃
	439	S	CF ₃	OCH ₃	CH ₃
	440	S	OCHF ₂	OCH ₃	CH ₃
	441	SO ₂	F	OCH ₃	CH ₃
	442	SO ₂	Cl	OCH ₃	CH ₃
20	443	SO ₂	Br	OCH ₃	CH ₃
	444	SO ₂	NO ₂	OCH ₃	CH ₃
	445	SO ₂	SCH ₃	OCH ₃	CH ₃
	446	SO ₂	SO ₂ CH ₃	OCH ₃	CH ₃
	447	SO ₂	SO ₂ CH ₂ CH ₃	OCH ₃	CH ₃
25	448	SO ₂	CH ₃	OCH ₃	CH ₃
	449	SO ₂	CF ₃	OCH ₃	CH ₃
	450	SO ₂	OCHF ₂	OCH ₃	CH ₃
	451	bond	F	OCH ₃	CH ₂ CH ₃
	452	bond	Cl	OCH ₃	CH ₂ CH ₃
30	453	bond	Br	OCH ₃	CH ₂ CH ₃
	454	bond	NO ₂	OCH ₃	CH ₂ CH ₃
	455	bond	SCH ₃	OCH ₃	CH ₂ CH ₃
	456	bond	SO ₂ CH ₃	OCH ₃	CH ₂ CH ₃
	457	bond	SO ₂ CH ₂ CH ₃	OCH ₃	CH ₂ CH ₃
35	458	bond	CH ₃	OCH ₃	CH ₂ CH ₃
	459	bond	CF ₃	OCH ₃	CH ₂ CH ₃
	460	bond	OCHF ₂	OCH ₃	CH ₂ CH ₃
	461	CH ₂	F	OCH ₃	CH ₂ CH ₃
	462	CH ₂	Cl	OCH ₃	CH ₂ CH ₃
40	463	CH ₂	Br	OCH ₃	CH ₂ CH ₃
	464	CH ₂	NO ₂	OCH ₃	CH ₂ CH ₃
	465	CH ₂	SCH ₃	OCH ₃	CH ₂ CH ₃
	466	CH ₂	SO ₂ CH ₃	OCH ₃	CH ₂ CH ₃

	n	X	R ⁴	R ¹⁰	R ¹¹
	467	CH ₂	SO ₂ CH ₂ CH ₃	OCH ₃	CH ₂ CH ₃
	468	CH ₂	CH ₃	OCH ₃	CH ₂ CH ₃
5	469	CH ₂	CF ₃	OCH ₃	CH ₂ CH ₃
	470	CH ₂	OCHF ₂	OCH ₃	CH ₂ CH ₃
	471	O	F	OCH ₃	CH ₂ CH ₃
	472	O	Cl	OCH ₃	CH ₂ CH ₃
10	473	O	Br	OCH ₃	CH ₂ CH ₃
	474	O	NO ₂	OCH ₃	CH ₂ CH ₃
	475	O	SCH ₃	OCH ₃	CH ₂ CH ₃
	476	O	SO ₂ CH ₃	OCH ₃	CH ₂ CH ₃
	477	O	SO ₂ CH ₂ CH ₃	OCH ₃	CH ₂ CH ₃
15	478	O	CH ₃	OCH ₃	CH ₂ CH ₃
	479	O	CF ₃	OCH ₃	CH ₂ CH ₃
	480	O	OCHF ₂	OCH ₃	CH ₂ CH ₃
	481	S	F	OCH ₃	CH ₂ CH ₃
20	482	S	Cl	OCH ₃	CH ₂ CH ₃
	483	S	Br	OCH ₃	CH ₂ CH ₃
	484	S	NO ₂	OCH ₃	CH ₂ CH ₃
	485	S	SCH ₃	OCH ₃	CH ₂ CH ₃
25	486	S	SO ₂ CH ₃	OCH ₃	CH ₂ CH ₃
	487	S	SO ₂ CH ₂ CH ₃	OCH ₃	CH ₂ CH ₃
	488	S	CH ₃	OCH ₃	CH ₂ CH ₃
	489	S	CF ₃	OCH ₃	CH ₂ CH ₃
	490	S	OCHF ₂	OCH ₃	CH ₂ CH ₃
30	491	SO ₂	F	OCH ₃	CH ₂ CH ₃
	492	SO ₂	Cl	OCH ₃	CH ₂ CH ₃
	493	SO ₂	Br	OCH ₃	CH ₂ CH ₃
	494	SO ₂	NO ₂	OCH ₃	CH ₂ CH ₃
35	495	SO ₂	SCH ₃	OCH ₃	CH ₂ CH ₃
	496	SO ₂	SO ₂ CH ₃	OCH ₃	CH ₂ CH ₃
	497	SO ₂	SO ₂ CH ₂ CH ₃	OCH ₃	CH ₂ CH ₃
	498	SO ₂	CH ₃	OCH ₃	CH ₂ CH ₃
40	499	SO ₂	CF ₃	OCH ₃	CH ₂ CH ₃
	500	SO ₂	OCHF ₂	OCH ₃	CH ₂ CH ₃
	501	bond	F	OCH(CH ₃) ₂	CH ₃
	502	bond	Cl	OCH(CH ₃) ₂	CH ₃
45	503	bond	Br	OCH(CH ₃) ₂	CH ₃
	504	bond	NO ₂	OCH(CH ₃) ₂	CH ₃
	505	bond	SCH ₃	OCH(CH ₃) ₂	CH ₃

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	n	X	R ⁴	R ¹⁰	R ¹¹
	506	bond	SO ₂ CH ₃	OCH(CH ₃) ₂	CH ₃
	507	bond	SO ₂ CH ₂ CH ₃	OCH(CH ₃) ₂	CH ₃
5	508	bond	CH ₃	OCH(CH ₃) ₂	CH ₃
	509	bond	CF ₃	OCH(CH ₃) ₂	CH ₃
	510	bond	OCHF ₂	OCH(CH ₃) ₂	CH ₃
	511	CH ₂	F	OCH(CH ₃) ₂	CH ₃
10	512	CH ₂	Cl	OCH(CH ₃) ₂	CH ₃
	513	CH ₂	Br	OCH(CH ₃) ₂	CH ₃
	514	CH ₂	NO ₂	OCH(CH ₃) ₂	CH ₃
	515	CH ₂	SCH ₃	OCH(CH ₃) ₂	CH ₃
	516	CH ₂	SO ₂ CH ₃	OCH(CH ₃) ₂	CH ₃
15	517	CH ₂	SO ₂ CH ₂ CH ₃	OCH(CH ₃) ₂	CH ₃
	518	CH ₂	CH ₃	OCH(CH ₃) ₂	CH ₃
	519	CH ₂	CF ₃	OCH(CH ₃) ₂	CH ₃
	520	CH ₂	OCHF ₂	OCH(CH ₃) ₂	CH ₃
20	521	O	F	OCH(CH ₃) ₂	CH ₃
	522	O	Cl	OCH(CH ₃) ₂	CH ₃
	523	O	Br	OCH(CH ₃) ₂	CH ₃
	524	O	NO ₂	OCH(CH ₃) ₂	CH ₃
25	525	O	SCH ₃	OCH(CH ₃) ₂	CH ₃
	526	O	SO ₂ CH ₃	OCH(CH ₃) ₂	CH ₃
	527	O	SO ₂ CH ₂ CH ₃	OCH(CH ₃) ₂	CH ₃
	528	O	CH ₃	OCH(CH ₃) ₂	CH ₃
	529	O	CF ₃	OCH(CH ₃) ₂	CH ₃
30	530	O	OCHF ₂	OCH(CH ₃) ₂	CH ₃
	531	S	F	OCH(CH ₃) ₂	CH ₃
	532	S	Cl	OCH(CH ₃) ₂	CH ₃
	533	S	Br	OCH(CH ₃) ₂	CH ₃
35	534	S	NO ₂	OCH(CH ₃) ₂	CH ₃
	535	S	SCH ₃	OCH(CH ₃) ₂	CH ₃
	536	S	SO ₂ CH ₃	OCH(CH ₃) ₂	CH ₃
	537	S	SO ₂ CH ₂ CH ₃	OCH(CH ₃) ₂	CH ₃
40	538	S	CH ₃	OCH(CH ₃) ₂	CH ₃
	539	S	CF ₃	OCH(CH ₃) ₂	CH ₃
	540	S	OCHF ₂	OCH(CH ₃) ₂	CH ₃
	541	SO ₂	F	OCH(CH ₃) ₂	CH ₃
45	542	SO ₂	Cl	OCH(CH ₃) ₂	CH ₃
	543	SO ₂	Br	OCH(CH ₃) ₂	CH ₃
	544	SO ₂	NO ₂	OCH(CH ₃) ₂	CH ₃

	n	X	R ⁴	R ¹⁰	R ¹¹
5	545	SO ₂	SCH ₃	OCH(CH ₃) ₂	CH ₃
	546	SO ₂	SO ₂ CH ₃	OCH(CH ₃) ₂	CH ₃
	547	SO ₂	SO ₂ CH ₂ CH ₃	OCH(CH ₃) ₂	CH ₃
	548	SO ₂	CH ₃	OCH(CH ₃) ₂	CH ₃
	549	SO ₂	CF ₃	OCH(CH ₃) ₂	CH ₃
10	550	SO ₂	OCHF ₂	OCH(CH ₃) ₂	CH ₃
	551	bond	F	OCH(CH ₃) ₂	CH ₂ CH ₃
	552	bond	Cl	OCH(CH ₃) ₂	CH ₂ CH ₃
	553	bond	Br	OCH(CH ₃) ₂	CH ₂ CH ₃
	554	bond	NO ₂	OCH(CH ₃) ₂	CH ₂ CH ₃
15	555	bond	SCH ₃	OCH(CH ₃) ₂	CH ₂ CH ₃
	556	bond	SO ₂ CH ₃	OCH(CH ₃) ₂	CH ₂ CH ₃
	557	bond	SO ₂ CH ₂ CH ₃	OCH(CH ₃) ₂	CH ₂ CH ₃
	558	bond	CH ₃	OCH(CH ₃) ₂	CH ₂ CH ₃
	559	bond	CF ₃	OCH(CH ₃) ₂	CH ₂ CH ₃
20	560	bond	OCHF ₂	OCH(CH ₃) ₂	CH ₂ CH ₃
	561	CH ₂	F	OCH(CH ₃) ₂	CH ₂ CH ₃
	562	CH ₂	Cl	OCH(CH ₃) ₂	CH ₂ CH ₃
	563	CH ₂	Br	OCH(CH ₃) ₂	CH ₂ CH ₃
	564	CH ₂	NO ₂	OCH(CH ₃) ₂	CH ₂ CH ₃
25	565	CH ₂	SCH ₃	OCH(CH ₃) ₂	CH ₂ CH ₃
	566	CH ₂	SO ₂ CH ₃	OCH(CH ₃) ₂	CH ₂ CH ₃
	567	CH ₂	SO ₂ CH ₂ CH ₃	OCH(CH ₃) ₂	CH ₂ CH ₃
	568	CH ₂	CH ₃	OCH(CH ₃) ₂	CH ₂ CH ₃
	569	CH ₂	CF ₃	OCH(CH ₃) ₂	CH ₂ CH ₃
30	570	CH ₂	OCHF ₂	OCH(CH ₃) ₂	CH ₂ CH ₃
	571	O	F	OCH(CH ₃) ₂	CH ₂ CH ₃
	572	O	Cl	OCH(CH ₃) ₂	CH ₂ CH ₃
	573	O	Br	OCH(CH ₃) ₂	CH ₂ CH ₃
	574	O	NO ₂	OCH(CH ₃) ₂	CH ₂ CH ₃
35	575	O	SCH ₃	OCH(CH ₃) ₂	CH ₂ CH ₃
	576	O	SO ₂ CH ₃	OCH(CH ₃) ₂	CH ₂ CH ₃
	577	O	SO ₂ CH ₂ CH ₃	OCH(CH ₃) ₂	CH ₂ CH ₃
	578	O	CH ₃	OCH(CH ₃) ₂	CH ₂ CH ₃
	579	O	CF ₃	OCH(CH ₃) ₂	CH ₂ CH ₃
40	580	O	OCHF ₂	OCH(CH ₃) ₂	CH ₂ CH ₃
	581	S	F	OCH(CH ₃) ₂	CH ₂ CH ₃
	582	S	Cl	OCH(CH ₃) ₂	CH ₂ CH ₃
	583	S	Br	OCH(CH ₃) ₂	CH ₂ CH ₃
		S			

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	n	X	R ⁴	R ¹⁰	R ¹¹
5	584	S	NO ₂	OCH(CH ₃) ₂	CH ₂ CH ₃
	585	S	SCH ₃	OCH(CH ₃) ₂	CH ₂ CH ₃
	586	S	SO ₂ CH ₃	OCH(CH ₃) ₂	CH ₂ CH ₃
	587	S	SO ₂ CH ₂ CH ₃	OCH(CH ₃) ₂	CH ₂ CH ₃
	588	S	CH ₃	OCH(CH ₃) ₂	CH ₂ CH ₃
10	589	S	CF ₃	OCH(CH ₃) ₂	CH ₂ CH ₃
	590	S	OCHF ₂	OCH(CH ₃) ₂	CH ₂ CH ₃
	591	SO ₂	F	OCH(CH ₃) ₂	CH ₂ CH ₃
	592	SO ₂	Cl	OCH(CH ₃) ₂	CH ₂ CH ₃
	593	SO ₂	Br	OCH(CH ₃) ₂	CH ₂ CH ₃
15	594	SO ₂	NO ₂	OCH(CH ₃) ₂	CH ₂ CH ₃
	595	SO ₂	SCH ₃	OCH(CH ₃) ₂	CH ₂ CH ₃
	596	SO ₂	SO ₂ CH ₃	OCH(CH ₃) ₂	CH ₂ CH ₃
	597	SO ₂	SO ₂ CH ₂ CH ₃	OCH(CH ₃) ₂	CH ₂ CH ₃
	598	SO ₂	CH ₃	OCH(CH ₃) ₂	CH ₂ CH ₃
20	599	SO ₂	CF ₃	OCH(CH ₃) ₂	CH ₂ CH ₃
	600	SO ₂	OCHF ₂	OCH(CH ₃) ₂	CH ₂ CH ₃
	601	bond	F	OCH ₂ C ₆ H ₅	CH ₃
	602	bond	Cl	OCH ₂ C ₆ H ₅	CH ₃
	603	bond	Br	OCH ₂ C ₆ H ₅	CH ₃
25	604	bond	NO ₂	OCH ₂ C ₆ H ₅	CH ₃
	605	bond	SCH ₃	OCH ₂ C ₆ H ₅	CH ₃
	606	bond	SO ₂ CH ₃	OCH ₂ C ₆ H ₅	CH ₃
	607	bond	SO ₂ CH ₂ CH ₃	OCH ₂ C ₆ H ₅	CH ₃
	608	bond	CH ₃	OCH ₂ C ₆ H ₅	CH ₃
30	609	bond	CF ₃	OCH ₂ C ₆ H ₅	CH ₃
	610	bond	OCHF ₂	OCH ₂ C ₆ H ₅	CH ₃
	611	CH ₂	F	OCH ₂ C ₆ H ₅	CH ₃
	612	CH ₂	Cl	OCH ₂ C ₆ H ₅	CH ₃
	613	CH ₂	Br	OCH ₂ C ₆ H ₅	CH ₃
35	614	CH ₂	NO ₂	OCH ₂ C ₆ H ₅	CH ₃
	615	CH ₂	SCH ₃	OCH ₂ C ₆ H ₅	CH ₃
	616	CH ₂	SO ₂ CH ₃	OCH ₂ C ₆ H ₅	CH ₃
	617	CH ₂	SO ₂ CH ₂ CH ₃	OCH ₂ C ₆ H ₅	CH ₃
	618	CH ₂	CH ₃	OCH ₂ C ₆ H ₅	CH ₃
40	619	CH ₂	CF ₃	OCH ₂ C ₆ H ₅	CH ₃
	620	CH ₂	OCHF ₂	OCH ₂ C ₆ H ₅	CH ₃
	621	O	F	OCH ₂ C ₆ H ₅	CH ₃
	622	O	Cl	OCH ₂ C ₆ H ₅	CH ₃
	622	O	Cl	OCH ₂ C ₆ H ₅	CH ₃

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	n	X	R ⁴	R ¹⁰	R ¹¹
5	623	O	Br	OCH ₂ C ₆ H ₅	CH ₃
	624	O	NO ₂	OCH ₂ C ₆ H ₅	CH ₃
	625	O	SCH ₃	OCH ₂ C ₆ H ₅	CH ₃
	626	O	SO ₂ CH ₃	OCH ₂ C ₆ H ₅	CH ₃
	627	O	SO ₂ CH ₂ CH ₃	OCH ₂ C ₆ H ₅	CH ₃
10	628	O	CH ₃	OCH ₂ C ₆ H ₅	CH ₃
	629	O	CF ₃	OCH ₂ C ₆ H ₅	CH ₃
	630	O	OCHF ₂	OCH ₂ C ₆ H ₅	CH ₃
	631	S	F	OCH ₂ C ₆ H ₅	CH ₃
	632	S	Cl	OCH ₂ C ₆ H ₅	CH ₃
15	633	S	Br	OCH ₂ C ₆ H ₅	CH ₃
	634	S	NO ₂	OCH ₂ C ₆ H ₅	CH ₃
	635	S	SCH ₃	OCH ₂ C ₆ H ₅	CH ₃
	636	S	SO ₂ CH ₃	OCH ₂ C ₆ H ₅	CH ₃
	637	S	SO ₂ CH ₂ CH ₃	OCH ₂ C ₆ H ₅	CH ₃
20	638	S	CH ₃	OCH ₂ C ₆ H ₅	CH ₃
	639	S	CF ₃	OCH ₂ C ₆ H ₅	CH ₃
	640	S	OCHF ₂	OCH ₂ C ₆ H ₅	CH ₃
	641	SO ₂	F	OCH ₂ C ₆ H ₅	CH ₃
	642	SO ₂	Cl	OCH ₂ C ₆ H ₅	CH ₃
25	643	SO ₂	Br	OCH ₂ C ₆ H ₅	CH ₃
	644	SO ₂	NO ₂	OCH ₂ C ₆ H ₅	CH ₃
	645	SO ₂	SCH ₃	OCH ₂ C ₆ H ₅	CH ₃
	646	SO ₂	SO ₂ CH ₃	OCH ₂ C ₆ H ₅	CH ₃
	647	SO ₂	SO ₂ CH ₂ CH ₃	OCH ₂ C ₆ H ₅	CH ₃
30	648	SO ₂	CH ₃	OCH ₂ C ₆ H ₅	CH ₃
	649	SO ₂	CF ₃	OCH ₂ C ₆ H ₅	CH ₃
	650	SO ₂	OCHF ₂	OCH ₂ C ₆ H ₅	CH ₃
	651	bond	F	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	652	bond	Cl	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
35	653	bond	Br	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	654	bond	NO ₂	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	655	bond	SCH ₃	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	656	bond	SO ₂ CH ₃	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	657	bond	SO ₂ CH ₂ CH ₃	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
40	658	bond	CH ₃	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	659	bond	CF ₃	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	660	bond	OCHF ₂	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	661	CH ₂	F	OCH ₂ C ₆ H ₅	CH ₂ CH ₃

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	n	X	R ⁴	R ¹⁰	R ¹¹
5	662	CH ₂	Cl	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	663	CH ₂	Br	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	664	CH ₂	NO ₂	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	665	CH ₂	SCH ₃	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	666	CH ₂	SO ₂ CH ₃	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
10	667	CH ₂	SO ₂ CH ₂ CH ₃	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	668	CH ₂	CH ₃	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	669	CH ₂	CF ₃	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	670	CH ₂	OCHF ₂	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	671	O	F	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
15	672	O	Cl	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	673	O	Br	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	674	O	NO ₂	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	675	O	SCH ₃	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	676	O	SO ₂ CH ₃	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
20	677	O	SO ₂ CH ₂ CH ₃	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	678	O	CH ₃	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	679	O	CF ₃	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	680	O	OCHF ₂	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	681	S	F	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
25	682	S	Cl	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	683	S	Br	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	684	S	NO ₂	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	685	S	SCH ₃	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	686	S	SO ₂ CH ₃	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
30	687	S	SO ₂ CH ₂ CH ₃	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	688	S	CH ₃	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	689	S	CF ₃	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	690	S	OCHF ₂	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	691	SO ₂	F	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
35	692	SO ₂	Cl	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	693	SO ₂	Br	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	694	SO ₂	NO ₂	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	695	SO ₂	SCH ₃	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	696	SO ₂	SO ₂ CH ₃	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
40	697	SO ₂	SO ₂ CH ₂ CH ₃	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	698	SO ₂	CH ₃	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	699	SO ₂	CF ₃	OCH ₂ C ₆ H ₅	CH ₂ CH ₃
	700	SO ₂	OCHF ₂	OCH ₂ C ₆ H ₅	CH ₂ CH ₃

	n	X	R ⁴	R ¹⁰	R ¹¹
5	701	bond	F	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	702	bond	Cl	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	703	bond	Br	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	704	bond	NO ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	705	bond	SCH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
10	706	bond	SO ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	707	bond	SO ₂ CH ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	708	bond	CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	709	bond	CF ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	710	bond	OCHF ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
15	711	CH ₂	F	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	712	CH ₂	Cl	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	713	CH ₂	Br	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	714	CH ₂	NO ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	715	CH ₂	SCH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
20	716	CH ₂	SO ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	717	CH ₂	SO ₂ CH ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	718	CH ₂	CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	719	CH ₂	CF ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	720	CH ₂	OCHF ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
25	721	O	F	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	722	O	Cl	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	723	O	Br	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	724	O	NO ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	725	O	SCH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
30	726	O	SO ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	727	O	SO ₂ CH ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	728	O	CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	729	O	CF ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	730	O	OCHF ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
35	731	S	F	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	732	S	Cl	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	733	S	Br	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	734	S	NO ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	735	S	SCH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
40	736	S	SO ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	737	S	SO ₂ CH ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	738	S	CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	739	S	CF ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	739	S	CF ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃

	n	X	R ⁴	R ¹⁰	R ¹¹
5	740	S	OCHF ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	741	SO ₂	F	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	742	SO ₂	Cl	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	743	SO ₂	Br	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	744	SO ₂	NO ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
10	745	SO ₂	SCH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	746	SO ₂	SO ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	747	SO ₂	SO ₂ CH ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	748	SO ₂	CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	749	SO ₂	CF ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
15	750	SO ₂	OCHF ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₃
	751	bond	F	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	752	bond	Cl	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	753	bond	Br	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	754	bond	NO ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
20	755	bond	SCH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	756	bond	SO ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	757	bond	SO ₂ CH ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	758	bond	CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	759	bond	CF ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
25	760	bond	OCHF ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	761	CH ₂	F	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	762	CH ₂	Cl	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	763	CH ₂	Br	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	764	CH ₂	NO ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
30	765	CH ₂	SCH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	766	CH ₂	SO ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	767	CH ₂	SO ₂ CH ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	768	CH ₂	CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	769	CH ₂	CF ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
35	770	CH ₂	OCHF ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	771	O	F	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	772	O	Cl	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	773	O	Br	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	774	O	NO ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
40	775	O	SCH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	776	O	SO ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	777	O	SO ₂ CH ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	778	O	CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃

	n	X	R ⁴	R ¹⁰	R ¹¹
5	779	O	CF ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	780	O	OCHF ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	781	S	F	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	782	S	Cl	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	783	S	Br	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
10	784	S	NO ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	785	S	SCH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	786	S	SO ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	787	S	SO ₂ CH ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	788	S	CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
15	789	S	CF ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	790	S	OCHF ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	791	SO ₂	F	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	792	SO ₂	Cl	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	793	SO ₂	Br	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
20	794	SO ₂	NO ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	795	SO ₂	SCH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	796	SO ₂	SO ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	797	SO ₂	SO ₂ CH ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	798	SO ₂	CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
25	799	SO ₂	CF ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	800	SO ₂	OCHF ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH ₂ CH ₃
	801	bond	F	SCH ₃	CH ₃
	802	bond	Cl	SCH ₃	CH ₃
	803	bond	Br	SCH ₃	CH ₃
30	804	bond	NO ₂	SCH ₃	CH ₃
	805	bond	SCH ₃	SCH ₃	CH ₃
	806	bond	SO ₂ CH ₃	SCH ₃	CH ₃
	807	bond	SO ₂ CH ₂ CH ₃	SCH ₃	CH ₃
	808	bond	CH ₃	SCH ₃	CH ₃
35	809	bond	CF ₃	SCH ₃	CH ₃
	810	bond	OCHF ₂	SCH ₃	CH ₃
	811	CH ₂	F	SCH ₃	CH ₃
	812	CH ₂	Cl	SCH ₃	CH ₃
	813	CH ₂	Br	SCH ₃	CH ₃
40	814	CH ₂	NO ₂	SCH ₃	CH ₃
	815	CH ₂	SCH ₃	SCH ₃	CH ₃
	816	CH ₂	SO ₂ CH ₃	SCH ₃	CH ₃
	817	CH ₂	SO ₂ CH ₂ CH ₃	SCH ₃	CH ₃

	n	X	R ⁴	R ¹⁰	R ¹¹
5	818	CH ₂	CH ₃	SCH ₃	CH ₃
	819	CH ₂	CF ₃	SCH ₃	CH ₃
	820	CH ₂	OCHF ₂	SCH ₃	CH ₃
	821	O	F	SCH ₃	CH ₃
	822	O	Cl	SCH ₃	CH ₃
10	823	O	Br	SCH ₃	CH ₃
	824	O	NO ₂	SCH ₃	CH ₃
	825	O	SCH ₃	SCH ₃	CH ₃
	826	O	SO ₂ CH ₃	SCH ₃	CH ₃
	827	O	SO ₂ CH ₂ CH ₃	SCH ₃	CH ₃
15	828	O	CH ₃	SCH ₃	CH ₃
	829	O	CF ₃	SCH ₃	CH ₃
	830	O	OCHF ₂	SCH ₃	CH ₃
	831	S	F	SCH ₃	CH ₃
	832	S	Cl	SCH ₃	CH ₃
20	833	S	Br	SCH ₃	CH ₃
	834	S	NO ₂	SCH ₃	CH ₃
	835	S	SCH ₃	SCH ₃	CH ₃
	836	S	SO ₂ CH ₃	SCH ₃	CH ₃
	837	S	SO ₂ CH ₂ CH ₃	SCH ₃	CH ₃
25	838	S	CH ₃	SCH ₃	CH ₃
	839	S	CF ₃	SCH ₃	CH ₃
	840	S	OCHF ₂	SCH ₃	CH ₃
	841	SO ₂	F	SCH ₃	CH ₃
	842	SO ₂	Cl	SCH ₃	CH ₃
30	843	SO ₂	Br	SCH ₃	CH ₃
	844	SO ₂	NO ₂	SCH ₃	CH ₃
	845	SO ₂	SCH ₃	SCH ₃	CH ₃
	846	SO ₂	SO ₂ CH ₃	SCH ₃	CH ₃
	847	SO ₂	SO ₂ CH ₂ CH ₃	SCH ₃	CH ₃
35	848	SO ₂	CH ₃	SCH ₃	CH ₃
	849	SO ₂	CF ₃	SCH ₃	CH ₃
	850	SO ₂	OCHF ₂	SCH ₃	CH ₃
	851	bond	F	SCH ₃	CH ₂ CH ₃
	852	bond	Cl	SCH ₃	CH ₂ CH ₃
40	853	bond	Br	SCH ₃	CH ₂ CH ₃
	854	bond	NO ₂	SCH ₃	CH ₂ CH ₃
	855	bond	SCH ₃	SCH ₃	CH ₂ CH ₃
	856	bond	SO ₂ CH ₃	SCH ₃	CH ₂ CH ₃
	856	bond	SO ₂ CH ₃	SCH ₃	CH ₂ CH ₃

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	n	X	R ⁴	R ¹⁰	R ¹¹
5	857	bond	SO ₂ CH ₂ CH ₃	SCH ₃	CH ₂ CH ₃
	858	bond	CH ₃	SCH ₃	CH ₂ CH ₃
	859	bond	CF ₃	SCH ₃	CH ₂ CH ₃
	860	bond	OCHF ₂	SCH ₃	CH ₂ CH ₃
	861	CH ₂	F	SCH ₃	CH ₂ CH ₃
10	862	CH ₂	Cl	SCH ₃	CH ₂ CH ₃
	863	CH ₂	Br	SCH ₃	CH ₂ CH ₃
	864	CH ₂	NO ₂	SCH ₃	CH ₂ CH ₃
	865	CH ₂	SCH ₃	SCH ₃	CH ₂ CH ₃
	866	CH ₂	SO ₂ CH ₃	SCH ₃	CH ₂ CH ₃
15	867	CH ₂	SO ₂ CH ₂ CH ₃	SCH ₃	CH ₂ CH ₃
	868	CH ₂	CH ₃	SCH ₃	CH ₂ CH ₃
	869	CH ₂	CF ₃	SCH ₃	CH ₂ CH ₃
	870	CH ₂	OCHF ₂	SCH ₃	CH ₂ CH ₃
	871	O	F	SCH ₃	CH ₂ CH ₃
20	872	O	Cl	SCH ₃	CH ₂ CH ₃
	873	O	Br	SCH ₃	CH ₂ CH ₃
	874	O	NO ₂	SCH ₃	CH ₂ CH ₃
	875	O	SCH ₃	SCH ₃	CH ₂ CH ₃
	876	O	SO ₂ CH ₃	SCH ₃	CH ₂ CH ₃
25	877	O	SO ₂ CH ₂ CH ₃	SCH ₃	CH ₂ CH ₃
	878	O	CH ₃	SCH ₃	CH ₂ CH ₃
	879	O	CF ₃	SCH ₃	CH ₂ CH ₃
	880	O	OCHF ₂	SCH ₃	CH ₂ CH ₃
	881	S	F	SCH ₃	CH ₂ CH ₃
30	882	S	Cl	SCH ₃	CH ₂ CH ₃
	883	S	Br	SCH ₃	CH ₂ CH ₃
	884	S	NO ₂	SCH ₃	CH ₂ CH ₃
	885	S	SCH ₃	SCH ₃	CH ₂ CH ₃
	886	S	SO ₂ CH ₃	SCH ₃	CH ₂ CH ₃
35	887	S	SO ₂ CH ₂ CH ₃	SCH ₃	CH ₂ CH ₃
	888	S	CH ₃	SCH ₃	CH ₂ CH ₃
	889	S	CF ₃	SCH ₃	CH ₂ CH ₃
	890	S	OCHF ₂	SCH ₃	CH ₂ CH ₃
	891	SO ₂	F	SCH ₃	CH ₂ CH ₃
40	892	SO ₂	Cl	SCH ₃	CH ₂ CH ₃
	893	SO ₂	Br	SCH ₃	CH ₂ CH ₃
	894	SO ₂	NO ₂	SCH ₃	CH ₂ CH ₃
	895	SO ₂	SCH ₃	SCH ₃	CH ₂ CH ₃

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	n	X	R ⁴	R ¹⁰	R ¹¹
5	896	SO ₂	SO ₂ CH ₃	SCH ₃	CH ₂ CH ₃
	897	SO ₂	SO ₂ CH ₂ CH ₃	SCH ₃	CH ₂ CH ₃
	898	SO ₂	CH ₃	SCH ₃	CH ₂ CH ₃
	899	SO ₂	CF ₃	SCH ₃	CH ₂ CH ₃
	900	SO ₂	OCHF ₂	SCH ₃	CH ₂ CH ₃
10	901	bond	F	Cl	CH ₃
	902	bond	Cl	Cl	CH ₃
	903	bond	Br	Cl	CH ₃
	904	bond	NO ₂	Cl	CH ₃
	905	bond	SCH ₃	Cl	CH ₃
15	906	bond	SO ₂ CH ₃	Cl	CH ₃
	907	bond	SO ₂ CH ₂ CH ₃	Cl	CH ₃
	908	bond	CH ₃	Cl	CH ₃
	909	bond	CF ₃	Cl	CH ₃
	910	bond	OCHF ₂	Cl	CH ₃
20	911	CH ₂	F	Cl	CH ₃
	912	CH ₂	Cl	Cl	CH ₃
	913	CH ₂	Br	Cl	CH ₃
	914	CH ₂	NO ₂	Cl	CH ₃
	915	CH ₂	SCH ₃	Cl	CH ₃
25	916	CH ₂	SO ₂ CH ₃	Cl	CH ₃
	917	CH ₂	SO ₂ CH ₂ CH ₃	Cl	CH ₃
	918	CH ₂	CH ₃	Cl	CH ₃
	919	CH ₂	CF ₃	Cl	CH ₃
	920	CH ₂	OCHF ₂	Cl	CH ₃
30	921	O	F	Cl	CH ₃
	922	O	Cl	Cl	CH ₃
	923	O	Br	Cl	CH ₃
	924	O	NO ₂	Cl	CH ₃
	925	O	SCH ₃	Cl	CH ₃
35	926	O	SO ₂ CH ₃	Cl	CH ₃
	927	O	SO ₂ CH ₂ CH ₃	Cl	CH ₃
	928	O	CH ₃	Cl	CH ₃
	929	O	CF ₃	Cl	CH ₃
	930	O	OCHF ₂	Cl	CH ₃
40	931	S	F	Cl	CH ₃
	932	S	Cl	Cl	CH ₃
	933	S	Br	Cl	CH ₃
	934	S	NO ₂	Cl	CH ₃

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	n	X	R ⁴	R ¹⁰	R ¹¹
5	935	S	SCH ₃	Cl	CH ₃
	936	S	SO ₂ CH ₃	Cl	CH ₃
	937	S	SO ₂ CH ₂ CH ₃	Cl	CH ₃
	938	S	CH ₃	Cl	CH ₃
	939	S	CF ₃	Cl	CH ₃
10	940	S	OCHF ₂	Cl	CH ₃
	941	SO ₂	F	Cl	CH ₃
	942	SO ₂	Cl	Cl	CH ₃
	943	SO ₂	Br	Cl	CH ₃
	944	SO ₂	NO ₂	Cl	CH ₃
15	945	SO ₂	SCH ₃	Cl	CH ₃
	946	SO ₂	SO ₂ CH ₃	Cl	CH ₃
	947	SO ₂	SO ₂ CH ₂ CH ₃	Cl	CH ₃
	948	SO ₂	CH ₃	Cl	CH ₃
	949	SO ₂	CF ₃	Cl	CH ₃
20	950	SO ₂	OCHF ₂	Cl	CH ₃
	951	bond	F	Cl	CH ₂ CH ₃
	952	bond	Cl	Cl	CH ₂ CH ₃
	953	bond	Br	Cl	CH ₂ CH ₃
	954	bond	NO ₂	Cl	CH ₂ CH ₃
25	955	bond	SCH ₃	Cl	CH ₂ CH ₃
	956	bond	SO ₂ CH ₃	Cl	CH ₂ CH ₃
	957	bond	SO ₂ CH ₂ CH ₃	Cl	CH ₂ CH ₃
	958	bond	CH ₃	Cl	CH ₂ CH ₃
	959	bond	CF ₃	Cl	CH ₂ CH ₃
30	960	bond	OCHF ₂	Cl	CH ₂ CH ₃
	961	CH ₂	F	Cl	CH ₂ CH ₃
	962	CH ₂	Cl	Cl	CH ₂ CH ₃
	963	CH ₂	Br	Cl	CH ₂ CH ₃
	964	CH ₂	NO ₂	Cl	CH ₂ CH ₃
35	965	CH ₂	SCH ₃	Cl	CH ₂ CH ₃
	966	CH ₂	SO ₂ CH ₃	Cl	CH ₂ CH ₃
	967	CH ₂	SO ₂ CH ₂ CH ₃	Cl	CH ₂ CH ₃
	968	CH ₂	CH ₃	Cl	CH ₂ CH ₃
	969	CH ₂	CF ₃	Cl	CH ₂ CH ₃
40	970	CH ₂	OCHF ₂	Cl	CH ₂ CH ₃
	971	O	F	Cl	CH ₂ CH ₃
	972	O	Cl	Cl	CH ₂ CH ₃
	973	O	Br	Cl	CH ₂ CH ₃

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	n	X	R ⁴	R ¹⁰	R ¹¹
5	974	O	NO ₂	Cl	CH ₂ CH ₃
	975	O	SCH ₃	Cl	CH ₂ CH ₃
	976	O	SO ₂ CH ₃	Cl	CH ₂ CH ₃
	977	O	SO ₂ CH ₂ CH ₃	Cl	CH ₂ CH ₃
	978	O	CH ₃	Cl	CH ₂ CH ₃
10	979	O	CF ₃	Cl	CH ₂ CH ₃
	980	O	OCHF ₂	Cl	CH ₂ CH ₃
	981	S	F	Cl	CH ₂ CH ₃
	982	S	Cl	Cl	CH ₂ CH ₃
	983	S	Br	Cl	CH ₂ CH ₃
15	984	S	NO ₂	Cl	CH ₂ CH ₃
	985	S	SCH ₃	Cl	CH ₂ CH ₃
	986	S	SO ₂ CH ₃	Cl	CH ₂ CH ₃
	987	S	SO ₂ CH ₂ CH ₃	Cl	CH ₂ CH ₃
	988	S	CH ₃	Cl	CH ₂ CH ₃
20	989	S	CF ₃	Cl	CH ₂ CH ₃
	990	S	OCHF ₂	Cl	CH ₂ CH ₃
	991	SO ₂	F	Cl	CH ₂ CH ₃
	992	SO ₂	Cl	Cl	CH ₂ CH ₃
	993	SO ₂	Br	Cl	CH ₂ CH ₃
25	994	SO ₂	NO ₂	Cl	CH ₂ CH ₃
	995	SO ₂	SCH ₃	Cl	CH ₂ CH ₃
	996	SO ₂	SO ₂ CH ₃	Cl	CH ₂ CH ₃
	997	SO ₂	SO ₂ CH ₂ CH ₃	Cl	CH ₂ CH ₃
	998	SO ₂	CH ₃	Cl	CH ₂ CH ₃
30	999	SO ₂	CF ₃	Cl	CH ₂ CH ₃
	1000	SO ₂	OCHF ₂	Cl	CH ₂ CH ₃
	1001	bond	F	OH	CH(CH ₃) ₂
	1002	bond	Cl	OH	CH(CH ₃) ₂
	1003	bond	Br	OH	CH(CH ₃) ₂
35	1004	bond	NO ₂	OH	CH(CH ₃) ₂
	1005	bond	SCH ₃	OH	CH(CH ₃) ₂
	1006	bond	SO ₂ CH ₃	OH	CH(CH ₃) ₂
	1007	bond	SO ₂ CH ₂ CH ₃	OH	CH(CH ₃) ₂
	1008	bond	CH ₃	OH	CH(CH ₃) ₂
40	1009	bond	CF ₃	OH	CH(CH ₃) ₂
	1010	bond	OCHF ₂	OH	CH(CH ₃) ₂
	1011	CH ₂	F	OH	CH(CH ₃) ₂
	1012	CH ₂	Cl	OH	CH(CH ₃) ₂

	n	X	R ⁴	R ¹⁰	R ¹¹
5	2025	CH ₂	Br	OH	CH(CH ₃) ₂
	2026	CH ₂	NO ₂	OH	CH(CH ₃) ₂
	2027	CH ₂	SCH ₃	OH	CH(CH ₃) ₂
	2028	CH ₂	SO ₂ CH ₃	OH	CH(CH ₃) ₂
	2029	CH ₂	SO ₂ CH ₂ CH ₃	OH	CH(CH ₃) ₂
10	2030	CH ₂	CH ₃	OH	CH(CH ₃) ₂
	2031	CH ₂	CF ₃	OH	CH(CH ₃) ₂
	2032	CH ₂	OCHF ₂	OH	CH(CH ₃) ₂
	2033	O	F	OH	CH(CH ₃) ₂
	2034	O	Cl	OH	CH(CH ₃) ₂
15	2035	O	Br	OH	CH(CH ₃) ₂
	2036	O	NO ₂	OH	CH(CH ₃) ₂
	2037	O	SCH ₃	OH	CH(CH ₃) ₂
	2038	O	SO ₂ CH ₃	OH	CH(CH ₃) ₂
	2039	O	SO ₂ CH ₂ CH ₃	OH	CH(CH ₃) ₂
20	2040	O	CH ₃	OH	CH(CH ₃) ₂
	2041	O	CF ₃	OH	CH(CH ₃) ₂
	2042	O	OCHF ₂	OH	CH(CH ₃) ₂
	2043	S	F	OH	CH(CH ₃) ₂
	2044	S	Cl	OH	CH(CH ₃) ₂
25	2045	S	Br	OH	CH(CH ₃) ₂
	2046	S	NO ₂	OH	CH(CH ₃) ₂
	2047	S	SCH ₃	OH	CH(CH ₃) ₂
	2048	S	SO ₂ CH ₃	OH	CH(CH ₃) ₂
	2049	S	SO ₂ CH ₂ CH ₃	OH	CH(CH ₃) ₂
30	2050	S	CH ₃	OH	CH(CH ₃) ₂
	2051	S	CF ₃	OH	CH(CH ₃) ₂
	2052	S	OCHF ₂	OH	CH(CH ₃) ₂
	2053	SO ₂	F	OH	CH(CH ₃) ₂
	2054	SO ₂	Cl	OH	CH(CH ₃) ₂
35	2055	SO ₂	Br	OH	CH(CH ₃) ₂
	2056	SO ₂	NO ₂	OH	CH(CH ₃) ₂
	2057	SO ₂	SCH ₃	OH	CH(CH ₃) ₂
	2058	SO ₂	SO ₂ CH ₃	OH	CH(CH ₃) ₂
	2059	SO ₂	SO ₂ CH ₂ CH ₃	OH	CH(CH ₃) ₂
40	2060	SO ₂	CH ₃	OH	CH(CH ₃) ₂
	2061	SO ₂	CF ₃	OH	CH(CH ₃) ₂
	2062	SO ₂	OCHF ₂	OH	CH(CH ₃) ₂
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	n	X	R ⁴	R ¹⁰	R ¹¹
5	2063	bond	F	OH	C(CH ₃) ₃
	2064	bond	Cl	OH	C(CH ₃) ₃
	2065	bond	Br	OH	C(CH ₃) ₃
	2066	bond	NO ₂	OH	C(CH ₃) ₃
	2067	bond	SCH ₃	OH	C(CH ₃) ₃
10	2068	bond	SO ₂ CH ₃	OH	C(CH ₃) ₃
	2069	bond	SO ₂ CH ₂ CH ₃	OH	C(CH ₃) ₃
	2070	bond	CH ₃	OH	C(CH ₃) ₃
	2071	bond	CF ₃	OH	C(CH ₃) ₃
	2072	bond	OCHF ₂	OH	C(CH ₃) ₃
15	2073	CH ₂	F	OH	C(CH ₃) ₃
	2074	CH ₂	Cl	OH	C(CH ₃) ₃
	2075	CH ₂	Br	OH	C(CH ₃) ₃
	2076	CH ₂	NO ₂	OH	C(CH ₃) ₃
	2077	CH ₂	SCH ₃	OH	C(CH ₃) ₃
20	2078	CH ₂	SO ₂ CH ₃	OH	C(CH ₃) ₃
	2079	CH ₂	SO ₂ CH ₂ CH ₃	OH	C(CH ₃) ₃
	2080	CH ₂	CH ₃	OH	C(CH ₃) ₃
	2081	CH ₂	CF ₃	OH	C(CH ₃) ₃
	2082	CH ₂	OCHF ₂	OH	C(CH ₃) ₃
25	2083	O	F	OH	C(CH ₃) ₃
	2084	O	Cl	OH	C(CH ₃) ₃
	2085	O	Br	OH	C(CH ₃) ₃
	2086	O	NO ₂	OH	C(CH ₃) ₃
	2087	O	SCH ₃	OH	C(CH ₃) ₃
30	2088	O	SO ₂ CH ₃	OH	C(CH ₃) ₃
	2089	O	SO ₂ CH ₂ CH ₃	OH	C(CH ₃) ₃
	2090	O	CH ₃	OH	C(CH ₃) ₃
	2091	O	CF ₃	OH	C(CH ₃) ₃
	2092	O	OCHF ₂	OH	C(CH ₃) ₃
35	2093	S	F	OH	C(CH ₃) ₃
	2094	S	Cl	OH	C(CH ₃) ₃
	2095	S	Br	OH	C(CH ₃) ₃
	2096	S	NO ₂	OH	C(CH ₃) ₃
	2097	S	SCH ₃	OH	C(CH ₃) ₃
40	2098	S	SO ₂ CH ₃	OH	C(CH ₃) ₃
	2099	S	SO ₂ CH ₂ CH ₃	OH	C(CH ₃) ₃
	2100	S	CH ₃	OH	C(CH ₃) ₃
	2101	S	CF ₃	OH	C(CH ₃) ₃

	n	X	R ⁴	R ¹⁰	R ¹¹
	2102	S	OCHF ₂	OH	C(CH ₃) ₃
	2103	SO ₂	F	OH	C(CH ₃) ₃
5	2104	SO ₂	Cl	OH	C(CH ₃) ₃
	2105	SO ₂	Br	OH	C(CH ₃) ₃
	2106	SO ₂	NO ₂	OH	C(CH ₃) ₃
	2107	SO ₂	SCH ₃	OH	C(CH ₃) ₃
10	2108	SO ₂	SO ₂ CH ₃	OH	C(CH ₃) ₃
	2109	SO ₂	SO ₂ CH ₂ CH ₃	OH	C(CH ₃) ₃
	2110	SO ₂	CH ₃	OH	C(CH ₃) ₃
	2111	SO ₂	CF ₃	OH	C(CH ₃) ₃
	2112	SO ₂	OCHF ₂	OH	C(CH ₃) ₃
15	2113	bond	F	OCOC ₆ H ₅	CH(CH ₃) ₂
	2114	bond	Cl	OCOC ₆ H ₅	CH(CH ₃) ₂
	2115	bond	Br	OCOC ₆ H ₅	CH(CH ₃) ₂
	2116	bond	NO ₂	OCOC ₆ H ₅	CH(CH ₃) ₂
20	2117	bond	SCH ₃	OCOC ₆ H ₅	CH(CH ₃) ₂
	2118	bond	SO ₂ CH ₃	OCOC ₆ H ₅	CH(CH ₃) ₂
	2119	bond	SO ₂ CH ₂ CH ₃	OCOC ₆ H ₅	CH(CH ₃) ₂
	2120	bond	CH ₃	OCOC ₆ H ₅	CH(CH ₃) ₂
25	2121	bond	CF ₃	OCOC ₆ H ₅	CH(CH ₃) ₂
	2122	bond	OCHF ₂	OCOC ₆ H ₅	CH(CH ₃) ₂
	2123	CH ₂	F	OCOC ₆ H ₅	CH(CH ₃) ₂
	2124	CH ₂	Cl	OCOC ₆ H ₅	CH(CH ₃) ₂
	2125	CH ₂	Br	OCOC ₆ H ₅	CH(CH ₃) ₂
30	2126	CH ₂	NO ₂	OCOC ₆ H ₅	CH(CH ₃) ₂
	2127	CH ₂	SCH ₃	OCOC ₆ H ₅	CH(CH ₃) ₂
	2128	CH ₂	SO ₂ CH ₃	OCOC ₆ H ₅	CH(CH ₃) ₂
	2129	CH ₂	SO ₂ CH ₂ CH ₃	OCOC ₆ H ₅	CH(CH ₃) ₂
35	2130	CH ₂	CH ₃	OCOC ₆ H ₅	CH(CH ₃) ₂
	2131	CH ₂	CF ₃	OCOC ₆ H ₅	CH(CH ₃) ₂
	2132	CH ₂	OCHF ₂	OCOC ₆ H ₅	CH(CH ₃) ₂
	2133	O	F	OCOC ₆ H ₅	CH(CH ₃) ₂
40	2134	O	Cl	OCOC ₆ H ₅	CH(CH ₃) ₂
	2135	O	Br	OCOC ₆ H ₅	CH(CH ₃) ₂
	2136	O	NO ₂	OCOC ₆ H ₅	CH(CH ₃) ₂
	2137	O	SCH ₃	OCOC ₆ H ₅	CH(CH ₃) ₂
45	2138	O	SO ₂ CH ₃	OCOC ₆ H ₅	CH(CH ₃) ₂
	2139	O	SO ₂ CH ₂ CH ₃	OCOC ₆ H ₅	CH(CH ₃) ₂
	2140	O	CH ₃	OCOC ₆ H ₅	CH(CH ₃) ₂

	n	X	R ⁴	R ¹⁰	R ¹¹
5	2141	O	CF ₃	OCOC ₆ H ₅	CH(CH ₃) ₂
	2142	O	OCHF ₂	OCOC ₆ H ₅	CH(CH ₃) ₂
	2143	S	F	OCOC ₆ H ₅	CH(CH ₃) ₂
	2144	S	Cl	OCOC ₆ H ₅	CH(CH ₃) ₂
	2145	S	Br	OCOC ₆ H ₅	CH(CH ₃) ₂
10	2146	S	NO ₂	OCOC ₆ H ₅	CH(CH ₃) ₂
	2147	S	SCH ₃	OCOC ₆ H ₅	CH(CH ₃) ₂
	2148	S	SO ₂ CH ₃	OCOC ₆ H ₅	CH(CH ₃) ₂
	2149	S	SO ₂ CH ₂ CH ₃	OCOC ₆ H ₅	CH(CH ₃) ₂
	2150	S	CH ₃	OCOC ₆ H ₅	CH(CH ₃) ₂
15	2151	S	CF ₃	OCOC ₆ H ₅	CH(CH ₃) ₂
	2152	S	OCHF ₂	OCOC ₆ H ₅	CH(CH ₃) ₂
	2153	SO ₂	F	OCOC ₆ H ₅	CH(CH ₃) ₂
	2154	SO ₂	Cl	OCOC ₆ H ₅	CH(CH ₃) ₂
	2155	SO ₂	Br	OCOC ₆ H ₅	CH(CH ₃) ₂
20	2156	SO ₂	NO ₂	OCOC ₆ H ₅	CH(CH ₃) ₂
	2157	SO ₂	SCH ₃	OCOC ₆ H ₅	CH(CH ₃) ₂
	2158	SO ₂	SO ₂ CH ₃	OCOC ₆ H ₅	CH(CH ₃) ₂
	2159	SO ₂	SO ₂ CH ₂ CH ₃	OCOC ₆ H ₅	CH(CH ₃) ₂
	2160	SO ₂	CH ₃	OCOC ₆ H ₅	CH(CH ₃) ₂
25	2161	SO ₂	CF ₃	OCOC ₆ H ₅	CH(CH ₃) ₂
	2162	SO ₂	OCHF ₂	OCOC ₆ H ₅	CH(CH ₃) ₂
	2163	bond	F	OCOC ₆ H ₅	C(CH ₃) ₃
	2164	bond	Cl	OCOC ₆ H ₅	C(CH ₃) ₃
	2165	bond	Br	OCOC ₆ H ₅	C(CH ₃) ₃
30	2166	bond	NO ₂	OCOC ₆ H ₅	C(CH ₃) ₃
	2167	bond	SCH ₃	OCOC ₆ H ₅	C(CH ₃) ₃
	2168	bond	SO ₂ CH ₃	OCOC ₆ H ₅	C(CH ₃) ₃
	2169	bond	SO ₂ CH ₂ CH ₃	OCOC ₆ H ₅	C(CH ₃) ₃
	2170	bond	CH ₃	OCOC ₆ H ₅	C(CH ₃) ₃
35	2171	bond	CF ₃	OCOC ₆ H ₅	C(CH ₃) ₃
	2172	bond	OCHF ₂	OCOC ₆ H ₅	C(CH ₃) ₃
	2173	CH ₂	F	OCOC ₆ H ₅	C(CH ₃) ₃
	2174	CH ₂	Cl	OCOC ₆ H ₅	C(CH ₃) ₃
	2175	CH ₂	Br	OCOC ₆ H ₅	C(CH ₃) ₃
40	2176	CH ₂	NO ₂	OCOC ₆ H ₅	C(CH ₃) ₃
	2177	CH ₂	SCH ₃	OCOC ₆ H ₅	C(CH ₃) ₃
	2178	CH ₂	SO ₂ CH ₃	OCOC ₆ H ₅	C(CH ₃) ₃
	2179	CH ₂	SO ₂ CH ₂ CH ₃	OCOC ₆ H ₅	C(CH ₃) ₃
	2179	CH ₂	SO ₂ CH ₂ CH ₃	OCOC ₆ H ₅	C(CH ₃) ₃

	n	X	R ⁴	R ¹⁰	R ¹¹
5	2180	CH ₂	CH ₃	OCOC ₆ H ₅	C(CH ₃) ₃
	2181	CH ₂	CF ₃	OCOC ₆ H ₅	C(CH ₃) ₃
	2182	CH ₂	OCHF ₂	OCOC ₆ H ₅	C(CH ₃) ₃
	2183	O	F	OCOC ₆ H ₅	C(CH ₃) ₃
	2184	O	Cl	OCOC ₆ H ₅	C(CH ₃) ₃
10	2185	O	Br	OCOC ₆ H ₅	C(CH ₃) ₃
	2186	O	NO ₂	OCOC ₆ H ₅	C(CH ₃) ₃
	2187	O	SCH ₃	OCOC ₆ H ₅	C(CH ₃) ₃
	2188	O	SO ₂ CH ₃	OCOC ₆ H ₅	C(CH ₃) ₃
	2189	O	SO ₂ CH ₂ CH ₃	OCOC ₆ H ₅	C(CH ₃) ₃
15	2190	O	CH ₃	OCOC ₆ H ₅	C(CH ₃) ₃
	2191	O	CF ₃	OCOC ₆ H ₅	C(CH ₃) ₃
	2192	O	OCHF ₂	OCOC ₆ H ₅	C(CH ₃) ₃
	2193	S	F	OCOC ₆ H ₅	C(CH ₃) ₃
	2194	S	Cl	OCOC ₆ H ₅	C(CH ₃) ₃
20	2195	S	Br	OCOC ₆ H ₅	C(CH ₃) ₃
	2196	S	NO ₂	OCOC ₆ H ₅	C(CH ₃) ₃
	2197	S	SCH ₃	OCOC ₆ H ₅	C(CH ₃) ₃
	2198	S	SO ₂ CH ₃	OCOC ₆ H ₅	C(CH ₃) ₃
	2199	S	SO ₂ CH ₂ CH ₃	OCOC ₆ H ₅	C(CH ₃) ₃
25	2200	S	CH ₃	OCOC ₆ H ₅	C(CH ₃) ₃
	2201	S	CF ₃	OCOC ₆ H ₅	C(CH ₃) ₃
	2202	S	OCHF ₂	OCOC ₆ H ₅	C(CH ₃) ₃
	2203	SO ₂	F	OCOC ₆ H ₅	C(CH ₃) ₃
	2204	SO ₂	Cl	OCOC ₆ H ₅	C(CH ₃) ₃
30	2205	SO ₂	Br	OCOC ₆ H ₅	C(CH ₃) ₃
	2206	SO ₂	NO ₂	OCOC ₆ H ₅	C(CH ₃) ₃
	2207	SO ₂	SCH ₃	OCOC ₆ H ₅	C(CH ₃) ₃
	2208	SO ₂	SO ₂ CH ₃	OCOC ₆ H ₅	C(CH ₃) ₃
	2209	SO ₂	SO ₂ CH ₂ CH ₃	OCOC ₆ H ₅	C(CH ₃) ₃
35	2210	SO ₂	CH ₃	OCOC ₆ H ₅	C(CH ₃) ₃
	2211	SO ₂	CF ₃	OCOC ₆ H ₅	C(CH ₃) ₃
	2212	SO ₂	OCHF ₂	OCOC ₆ H ₅	C(CH ₃) ₃
	2213	bond	F	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2214	bond	Cl	OCOC(CH ₃) ₃	CH(CH ₃) ₂
40	2215	bond	Br	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2216	bond	NO ₂	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2217	bond	SCH ₃	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2218	bond	SO ₂ CH ₃	OCOC(CH ₃) ₃	CH(CH ₃) ₂

	n	X	R ⁴	R ¹⁰	R ¹¹
5	2219	bond	SO ₂ CH ₂ CH ₃	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2220	bond	CH ₃	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2221	bond	CF ₃	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2222	bond	OCHF ₂	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2223	CH ₂	F	OCOC(CH ₃) ₃	CH(CH ₃) ₂
10	2224	CH ₂	Cl	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2225	CH ₂	Br	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2226	CH ₂	NO ₂	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2227	CH ₂	SCH ₃	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2228	CH ₂	SO ₂ CH ₃	OCOC(CH ₃) ₃	CH(CH ₃) ₂
15	2229	CH ₂	SO ₂ CH ₂ CH ₃	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2230	CH ₂	CH ₃	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2231	CH ₂	CF ₃	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2232	CH ₂	OCHF ₂	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2233	O	F	OCOC(CH ₃) ₃	CH(CH ₃) ₂
20	2234	O	Cl	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2235	O	Br	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2236	O	NO ₂	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2237	O	SCH ₃	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2238	O	SO ₂ CH ₃	OCOC(CH ₃) ₃	CH(CH ₃) ₂
25	2239	O	SO ₂ CH ₂ CH ₃	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2240	O	CH ₃	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2241	O	CF ₃	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2242	O	OCHF ₂	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2243	S	F	OCOC(CH ₃) ₃	CH(CH ₃) ₂
30	2244	S	Cl	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2245	S	Br	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2246	S	NO ₂	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2247	S	SCH ₃	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2248	S	SO ₂ CH ₃	OCOC(CH ₃) ₃	CH(CH ₃) ₂
35	2249	S	SO ₂ CH ₂ CH ₃	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2250	S	CH ₃	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2251	S	CF ₃	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2252	S	OCHF ₂	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2253	SO ₂	F	OCOC(CH ₃) ₃	CH(CH ₃) ₂
40	2254	SO ₂	Cl	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2255	SO ₂	Br	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2256	SO ₂	NO ₂	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2257	SO ₂	SCH ₃	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2257	SO ₂	SCH ₃	OCOC(CH ₃) ₃	CH(CH ₃) ₂

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	n	X	R ⁴	R ¹⁰	R ¹¹
5	2258	SO ₂	SO ₂ CH ₃	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2259	SO ₂	SO ₂ CH ₂ CH ₃	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2260	SO ₂	CH ₃	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2261	SO ₂	CF ₃	OCOC(CH ₃) ₃	CH(CH ₃) ₂
	2262	SO ₂	OCHF ₂	OCOC(CH ₃) ₃	CH(CH ₃) ₂
10	2263	bond	F	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2264	bond	Cl	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2265	bond	Br	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2266	bond	NO ₂	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2267	bond	SCH ₃	OCOC(CH ₃) ₃	C(CH ₃) ₃
15	2268	bond	SO ₂ CH ₃	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2269	bond	SO ₂ CH ₂ CH ₃	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2270	bond	CH ₃	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2271	bond	CF ₃	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2272	bond	OCHF ₂	OCOC(CH ₃) ₃	C(CH ₃) ₃
20	2273	CH ₂	F	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2274	CH ₂	Cl	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2275	CH ₂	Br	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2276	CH ₂	NO ₂	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2277	CH ₂	SCH ₃	OCOC(CH ₃) ₃	C(CH ₃) ₃
25	2278	CH ₂	SO ₂ CH ₃	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2279	CH ₂	SO ₂ CH ₂ CH ₃	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2280	CH ₂	CH ₃	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2281	CH ₂	CF ₃	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2282	CH ₂	OCHF ₂	OCOC(CH ₃) ₃	C(CH ₃) ₃
30	2283	O	F	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2284	O	Cl	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2285	O	Br	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2286	O	NO ₂	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2287	O	SCH ₃	OCOC(CH ₃) ₃	C(CH ₃) ₃
35	2288	O	SO ₂ CH ₃	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2289	O	SO ₂ CH ₂ CH ₃	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2290	O	CH ₃	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2291	O	CF ₃	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2292	O	OCHF ₂	OCOC(CH ₃) ₃	C(CH ₃) ₃
40	2293	S	F	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2294	S	Cl	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2295	S	Br	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2296	S	NO ₂	OCOC(CH ₃) ₃	C(CH ₃) ₃

	n	X	R ⁴	R ¹⁰	R ¹¹
5	2297	S	SCH ₃	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2298	S	SO ₂ CH ₃	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2299	S	SO ₂ CH ₂ CH ₃	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2300	S	CH ₃	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2301	S	CF ₃	OCOC(CH ₃) ₃	C(CH ₃) ₃
10	2302	S	OCHF ₂	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2303	SO ₂	F	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2304	SO ₂	Cl	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2305	SO ₂	Br	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2306	SO ₂	NO ₂	OCOC(CH ₃) ₃	C(CH ₃) ₃
15	2307	SO ₂	SCH ₃	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2308	SO ₂	SO ₂ CH ₃	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2309	SO ₂	SO ₂ CH ₂ CH ₃	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2310	SO ₂	CH ₃	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2311	SO ₂	CF ₃	OCOC(CH ₃) ₃	C(CH ₃) ₃
20	2312	SO ₂	OCHF ₂	OCOC(CH ₃) ₃	C(CH ₃) ₃
	2313	bond	F	OCOSCH ₃	CH(CH ₃) ₂
	2314	bond	Cl	OCOSCH ₃	CH(CH ₃) ₂
	2315	bond	Br	OCOSCH ₃	CH(CH ₃) ₂
	2316	bond	NO ₂	OCOSCH ₃	CH(CH ₃) ₂
25	2317	bond	SCH ₃	OCOSCH ₃	CH(CH ₃) ₂
	2318	bond	SO ₂ CH ₃	OCOSCH ₃	CH(CH ₃) ₂
	2319	bond	SO ₂ CH ₂ CH ₃	OCOSCH ₃	CH(CH ₃) ₂
	2320	bond	CH ₃	OCOSCH ₃	CH(CH ₃) ₂
	2321	bond	CF ₃	OCOSCH ₃	CH(CH ₃) ₂
30	2322	bond	OCHF ₂	OCOSCH ₃	CH(CH ₃) ₂
	2323	CH ₂	F	OCOSCH ₃	CH(CH ₃) ₂
	2324	CH ₂	Cl	OCOSCH ₃	CH(CH ₃) ₂
	2325	CH ₂	Br	OCOSCH ₃	CH(CH ₃) ₂
	2326	CH ₂	NO ₂	OCOSCH ₃	CH(CH ₃) ₂
35	2327	CH ₂	SCH ₃	OCOSCH ₃	CH(CH ₃) ₂
	2328	CH ₂	SO ₂ CH ₃	OCOSCH ₃	CH(CH ₃) ₂
	2329	CH ₂	SO ₂ CH ₂ CH ₃	OCOSCH ₃	CH(CH ₃) ₂
	2330	CH ₂	CH ₃	OCOSCH ₃	CH(CH ₃) ₂
	2331	CH ₂	CF ₃	OCOSCH ₃	CH(CH ₃) ₂
40	2332	CH ₂	OCHF ₂	OCOSCH ₃	CH(CH ₃) ₂
	2333	O	F	OCOSCH ₃	CH(CH ₃) ₂
	2334	O	Cl	OCOSCH ₃	CH(CH ₃) ₂
	2335	O	Br	OCOSCH ₃	CH(CH ₃) ₂
	2335	O	Br	OCOSCH ₃	CH(CH ₃) ₂

	n	X	R ⁴	R ¹⁰	R ¹¹
5	2336	O	NO ₂	OCOSCH ₃	CH(CH ₃) ₂
	2337	O	SCH ₃	OCOSCH ₃	CH(CH ₃) ₂
	2338	O	SO ₂ CH ₃	OCOSCH ₃	CH(CH ₃) ₂
	2339	O	SO ₂ CH ₂ CH ₃	OCOSCH ₃	CH(CH ₃) ₂
	2340	O	CH ₃	OCOSCH ₃	CH(CH ₃) ₂
10	2341	O	CF ₃	OCOSCH ₃	CH(CH ₃) ₂
	2342	O	OCHF ₂	OCOSCH ₃	CH(CH ₃) ₂
	2343	S	F	OCOSCH ₃	CH(CH ₃) ₂
	2344	S	Cl	OCOSCH ₃	CH(CH ₃) ₂
	2345	S	Br	OCOSCH ₃	CH(CH ₃) ₂
15	2346	S	NO ₂	OCOSCH ₃	CH(CH ₃) ₂
	2347	S	SCH ₃	OCOSCH ₃	CH(CH ₃) ₂
	2348	S	SO ₂ CH ₃	OCOSCH ₃	CH(CH ₃) ₂
	2349	S	SO ₂ CH ₂ CH ₃	OCOSCH ₃	CH(CH ₃) ₂
	2350	S	CH ₃	OCOSCH ₃	CH(CH ₃) ₂
20	2351	S	CF ₃	OCOSCH ₃	CH(CH ₃) ₂
	2352	S	OCHF ₂	OCOSCH ₃	CH(CH ₃) ₂
	2353	SO ₂	F	OCOSCH ₃	CH(CH ₃) ₂
	2354	SO ₂	Cl	OCOSCH ₃	CH(CH ₃) ₂
	2355	SO ₂	Br	OCOSCH ₃	CH(CH ₃) ₂
25	2356	SO ₂	NO ₂	OCOSCH ₃	CH(CH ₃) ₂
	2357	SO ₂	SCH ₃	OCOSCH ₃	CH(CH ₃) ₂
	2358	SO ₂	SO ₂ CH ₃	OCOSCH ₃	CH(CH ₃) ₂
	2359	SO ₂	SO ₂ CH ₂ CH ₃	OCOSCH ₃	CH(CH ₃) ₂
	2360	SO ₂	CH ₃	OCOSCH ₃	CH(CH ₃) ₂
30	2361	SO ₂	CF ₃	OCOSCH ₃	CH(CH ₃) ₂
	2362	SO ₂	OCHF ₂	OCOSCH ₃	CH(CH ₃) ₂
	2363	bond	F	OCOSCH ₃	C(CH ₃) ₃
	2364	bond	Cl	OCOSCH ₃	C(CH ₃) ₃
	2365	bond	Br	OCOSCH ₃	C(CH ₃) ₃
35	2366	bond	NO ₂	OCOSCH ₃	C(CH ₃) ₃
	2367	bond	SCH ₃	OCOSCH ₃	C(CH ₃) ₃
	2368	bond	SO ₂ CH ₃	OCOSCH ₃	C(CH ₃) ₃
	2369	bond	SO ₂ CH ₂ CH ₃	OCOSCH ₃	C(CH ₃) ₃
	2370	bond	CH ₃	OCOSCH ₃	C(CH ₃) ₃
40	2371	bond	CF ₃	OCOSCH ₃	C(CH ₃) ₃
	2372	bond	OCHF ₂	OCOSCH ₃	C(CH ₃) ₃
	2373	CH ₂	F	OCOSCH ₃	C(CH ₃) ₃
	2374	CH ₂	Cl	OCOSCH ₃	C(CH ₃) ₃
	2374	CH ₂	Cl	OCOSCH ₃	C(CH ₃) ₃

	n	X	R ⁴	R ¹⁰	R ¹¹
5	2375	CH ₂	Br	OCOSCH ₃	C(CH ₃) ₃
	2376	CH ₂	NO ₂	OCOSCH ₃	C(CH ₃) ₃
	2377	CH ₂	SCH ₃	OCOSCH ₃	C(CH ₃) ₃
	2378	CH ₂	SO ₂ CH ₃	OCOSCH ₃	C(CH ₃) ₃
	2379	CH ₂	SO ₂ CH ₂ CH ₃	OCOSCH ₃	C(CH ₃) ₃
10	2380	CH ₂	CH ₃	OCOSCH ₃	C(CH ₃) ₃
	2381	CH ₂	CF ₃	OCOSCH ₃	C(CH ₃) ₃
	2382	CH ₂	OCHF ₂	OCOSCH ₃	C(CH ₃) ₃
	2383	O	F	OCOSCH ₃	C(CH ₃) ₃
	2384	O	Cl	OCOSCH ₃	C(CH ₃) ₃
15	2385	O	Br	OCOSCH ₃	C(CH ₃) ₃
	2386	O	NO ₂	OCOSCH ₃	C(CH ₃) ₃
	2387	O	SCH ₃	OCOSCH ₃	C(CH ₃) ₃
	2388	O	SO ₂ CH ₃	OCOSCH ₃	C(CH ₃) ₃
	2389	O	SO ₂ CH ₂ CH ₃	OCOSCH ₃	C(CH ₃) ₃
20	2390	O	CH ₃	OCOSCH ₃	C(CH ₃) ₃
	2391	O	CF ₃	OCOSCH ₃	C(CH ₃) ₃
	2392	O	OCHF ₂	OCOSCH ₃	C(CH ₃) ₃
	2393	S	F	OCOSCH ₃	C(CH ₃) ₃
	2394	S	Cl	OCOSCH ₃	C(CH ₃) ₃
25	2395	S	Br	OCOSCH ₃	C(CH ₃) ₃
	2396	S	NO ₂	OCOSCH ₃	C(CH ₃) ₃
	2397	S	SCH ₃	OCOSCH ₃	C(CH ₃) ₃
	2398	S	SO ₂ CH ₃	OCOSCH ₃	C(CH ₃) ₃
	2399	S	SO ₂ CH ₂ CH ₃	OCOSCH ₃	C(CH ₃) ₃
30	2400	S	CH ₃	OCOSCH ₃	C(CH ₃) ₃
	2401	S	CF ₃	OCOSCH ₃	C(CH ₃) ₃
	2402	S	OCHF ₂	OCOSCH ₃	C(CH ₃) ₃
	2403	SO ₂	F	OCOSCH ₃	C(CH ₃) ₃
	2404	SO ₂	Cl	OCOSCH ₃	C(CH ₃) ₃
35	2405	SO ₂	Br	OCOSCH ₃	C(CH ₃) ₃
	2406	SO ₂	NO ₂	OCOSCH ₃	C(CH ₃) ₃
	2407	SO ₂	SCH ₃	OCOSCH ₃	C(CH ₃) ₃
	2408	SO ₂	SO ₂ CH ₃	OCOSCH ₃	C(CH ₃) ₃
	2409	SO ₂	SO ₂ CH ₂ CH ₃	OCOSCH ₃	C(CH ₃) ₃
40	2410	SO ₂	CH ₃	OCOSCH ₃	C(CH ₃) ₃
	2411	SO ₂	CF ₃	OCOSCH ₃	C(CH ₃) ₃
	2412	SO ₂	OCHF ₂	OCOSCH ₃	C(CH ₃) ₃
	2413	bond	F	OCH ₃	CH(CH ₃) ₂

	n	X	R ⁴	R ¹⁰	R ¹¹
5	2414	bond	Cl	OCH ₃	CH(CH ₃) ₂
	2415	bond	Br	OCH ₃	CH(CH ₃) ₂
	2416	bond	NO ₂	OCH ₃	CH(CH ₃) ₂
	2417	bond	SCH ₃	OCH ₃	CH(CH ₃) ₂
	2418	bond	SO ₂ CH ₃	OCH ₃	CH(CH ₃) ₂
10	2419	bond	SO ₂ CH ₂ CH ₃	OCH ₃	CH(CH ₃) ₂
	2420	bond	CH ₃	OCH ₃	CH(CH ₃) ₂
	2421	bond	CF ₃	OCH ₃	CH(CH ₃) ₂
	2422	bond	OCHF ₂	OCH ₃	CH(CH ₃) ₂
	2423	CH ₂	F	OCH ₃	CH(CH ₃) ₂
15	2424	CH ₂	Cl	OCH ₃	CH(CH ₃) ₂
	2425	CH ₂	Br	OCH ₃	CH(CH ₃) ₂
	2426	CH ₂	NO ₂	OCH ₃	CH(CH ₃) ₂
	2427	CH ₂	SCH ₃	OCH ₃	CH(CH ₃) ₂
	2428	CH ₂	SO ₂ CH ₃	OCH ₃	CH(CH ₃) ₂
20	2429	CH ₂	SO ₂ CH ₂ CH ₃	OCH ₃	CH(CH ₃) ₂
	2430	CH ₂	CH ₃	OCH ₃	CH(CH ₃) ₂
	2431	CH ₂	CF ₃	OCH ₃	CH(CH ₃) ₂
	2432	CH ₂	OCHF ₂	OCH ₃	CH(CH ₃) ₂
	2433	O	F	OCH ₃	CH(CH ₃) ₂
25	2434	O	Cl	OCH ₃	CH(CH ₃) ₂
	2435	O	Br	OCH ₃	CH(CH ₃) ₂
	2436	O	NO ₂	OCH ₃	CH(CH ₃) ₂
	2437	O	SCH ₃	OCH ₃	CH(CH ₃) ₂
	2438	O	SO ₂ CH ₃	OCH ₃	CH(CH ₃) ₂
30	2439	O	SO ₂ CH ₂ CH ₃	OCH ₃	CH(CH ₃) ₂
	2440	O	CH ₃	OCH ₃	CH(CH ₃) ₂
	2441	O	CF ₃	OCH ₃	CH(CH ₃) ₂
	2442	O	OCHF ₂	OCH ₃	CH(CH ₃) ₂
	2443	S	F	OCH ₃	CH(CH ₃) ₂
35	2444	S	Cl	OCH ₃	CH(CH ₃) ₂
	2445	S	Br	OCH ₃	CH(CH ₃) ₂
	2446	S	NO ₂	OCH ₃	CH(CH ₃) ₂
	2447	S	SCH ₃	OCH ₃	CH(CH ₃) ₂
	2448	S	SO ₂ CH ₃	OCH ₃	CH(CH ₃) ₂
40	2449	S	SO ₂ CH ₂ CH ₃	OCH ₃	CH(CH ₃) ₂
	2450	S	CH ₃	OCH ₃	CH(CH ₃) ₂
	2451	S	CF ₃	OCH ₃	CH(CH ₃) ₂
	2452	S	OCHF ₂	OCH ₃	CH(CH ₃) ₂

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	n	X	R ⁴	R ¹⁰	R ¹¹
5	2453	SO ₂	F	OCH ₃	CH(CH ₃) ₂
	2454	SO ₂	Cl	OCH ₃	CH(CH ₃) ₂
	2455	SO ₂	Br	OCH ₃	CH(CH ₃) ₂
	2456	SO ₂	NO ₂	OCH ₃	CH(CH ₃) ₂
	2457	SO ₂	SCH ₃	OCH ₃	CH(CH ₃) ₂
10	2458	SO ₂	SO ₂ CH ₃	OCH ₃	CH(CH ₃) ₂
	2459	SO ₂	SO ₂ CH ₂ CH ₃	OCH ₃	CH(CH ₃) ₂
	2460	SO ₂	CH ₃	OCH ₃	CH(CH ₃) ₂
	2461	SO ₂	CF ₃	OCH ₃	CH(CH ₃) ₂
	2462	SO ₂	OCHF ₂	OCH ₃	CH(CH ₃) ₂
15	2463	bond	F	OCH ₃	C(CH ₃) ₃
	2464	bond	Cl	OCH ₃	C(CH ₃) ₃
	2465	bond	Br	OCH ₃	C(CH ₃) ₃
	2466	bond	NO ₂	OCH ₃	C(CH ₃) ₃
	2467	bond	SCH ₃	OCH ₃	C(CH ₃) ₃
20	2468	bond	SO ₂ CH ₃	OCH ₃	C(CH ₃) ₃
	2469	bond	SO ₂ CH ₂ CH ₃	OCH ₃	C(CH ₃) ₃
	2470	bond	CH ₃	OCH ₃	C(CH ₃) ₃
	2471	bond	CF ₃	OCH ₃	C(CH ₃) ₃
	2472	bond	OCHF ₂	OCH ₃	C(CH ₃) ₃
25	2473	CH ₂	F	OCH ₃	C(CH ₃) ₃
	2474	CH ₂	Cl	OCH ₃	C(CH ₃) ₃
	2475	CH ₂	Br	OCH ₃	C(CH ₃) ₃
	2476	CH ₂	NO ₂	OCH ₃	C(CH ₃) ₃
	2477	CH ₂	SCH ₃	OCH ₃	C(CH ₃) ₃
30	2478	CH ₂	SO ₂ CH ₃	OCH ₃	C(CH ₃) ₃
	2479	CH ₂	SO ₂ CH ₂ CH ₃	OCH ₃	C(CH ₃) ₃
	2480	CH ₂	CH ₃	OCH ₃	C(CH ₃) ₃
	2481	CH ₂	CF ₃	OCH ₃	C(CH ₃) ₃
	2482	CH ₂	OCHF ₂	OCH ₃	C(CH ₃) ₃
35	2483	O	F	OCH ₃	C(CH ₃) ₃
	2484	O	Cl	OCH ₃	C(CH ₃) ₃
	2485	O	Br	OCH ₃	C(CH ₃) ₃
	2486	O	NO ₂	OCH ₃	C(CH ₃) ₃
	2487	O	SCH ₃	OCH ₃	C(CH ₃) ₃
40	2488	O	SO ₂ CH ₃	OCH ₃	C(CH ₃) ₃
	2489	O	SO ₂ CH ₂ CH ₃	OCH ₃	C(CH ₃) ₃
	2490	O	CH ₃	OCH ₃	C(CH ₃) ₃
	2491	O	CF ₃	OCH ₃	C(CH ₃) ₃

	n	X	R ⁴	R ¹⁰	R ¹¹
5	2492	O	OCHF ₂	OCH ₃	C(CH ₃) ₃
	2493	S	F	OCH ₃	C(CH ₃) ₃
	2494	S	Cl	OCH ₃	C(CH ₃) ₃
	2495	S	Br	OCH ₃	C(CH ₃) ₃
	2496	S	NO ₂	OCH ₃	C(CH ₃) ₃
10	2497	S	SCH ₃	OCH ₃	C(CH ₃) ₃
	2498	S	SO ₂ CH ₃	OCH ₃	C(CH ₃) ₃
	2499	S	SO ₂ CH ₂ CH ₃	OCH ₃	C(CH ₃) ₃
	2500	S	CH ₃	OCH ₃	C(CH ₃) ₃
	2501	S	CF ₃	OCH ₃	C(CH ₃) ₃
15	2502	S	OCHF ₂	OCH ₃	C(CH ₃) ₃
	2503	SO ₂	F	OCH ₃	C(CH ₃) ₃
	2504	SO ₂	Cl	OCH ₃	C(CH ₃) ₃
	2505	SO ₂	Br	OCH ₃	C(CH ₃) ₃
	2506	SO ₂	NO ₂	OCH ₃	C(CH ₃) ₃
20	2507	SO ₂	SCH ₃	OCH ₃	C(CH ₃) ₃
	2508	SO ₂	SO ₂ CH ₃	OCH ₃	C(CH ₃) ₃
	2509	SO ₂	SO ₂ CH ₂ CH ₃	OCH ₃	C(CH ₃) ₃
	2510	SO ₂	CH ₃	OCH ₃	C(CH ₃) ₃
	2511	SO ₂	CF ₃	OCH ₃	C(CH ₃) ₃
25	2512	SO ₂	OCHF ₂	OCH ₃	C(CH ₃) ₃
	2513	bond	F	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2514	bond	Cl	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2515	bond	Br	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2516	bond	NO ₂	OCH(CH ₃) ₂	CH(CH ₃) ₂
30	2517	bond	SCH ₃	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2518	bond	SO ₂ CH ₃	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2519	bond	SO ₂ CH ₂ CH ₃	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2520	bond	CH ₃	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2521	bond	CF ₃	OCH(CH ₃) ₂	CH(CH ₃) ₂
35	2522	bond	OCHF ₂	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2523	CH ₂	F	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2524	CH ₂	Cl	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2525	CH ₂	Br	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2526	CH ₂	NO ₂	OCH(CH ₃) ₂	CH(CH ₃) ₂
40	2527	CH ₂	SCH ₃	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2528	CH ₂	SO ₂ CH ₃	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2529	CH ₂	SO ₂ CH ₂ CH ₃	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2530	CH ₂	CH ₃	OCH(CH ₃) ₂	CH(CH ₃) ₂

	n	X	R ⁴	R ¹⁰	R ¹¹
5	2531	CH ₂	CF ₃	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2532	CH ₂	OCHF ₂	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2533	O	F	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2534	O	Cl	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2535	O	Br	OCH(CH ₃) ₂	CH(CH ₃) ₂
10	2536	O	NO ₂	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2537	O	SCH ₃	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2538	O	SO ₂ CH ₃	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2539	O	SO ₂ CH ₂ CH ₃	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2540	O	CH ₃	OCH(CH ₃) ₂	CH(CH ₃) ₂
15	2541	O	CF ₃	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2542	O	OCHF ₂	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2543	S	F	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2544	S	Cl	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2545	S	Br	OCH(CH ₃) ₂	CH(CH ₃) ₂
20	2546	S	NO ₂	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2547	S	SCH ₃	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2548	S	SO ₂ CH ₃	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2549	S	SO ₂ CH ₂ CH ₃	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2550	S	CH ₃	OCH(CH ₃) ₂	CH(CH ₃) ₂
25	2551	S	CF ₃	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2552	S	OCHF ₂	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2553	SO ₂	F	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2554	SO ₂	Cl	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2555	SO ₂	Br	OCH(CH ₃) ₂	CH(CH ₃) ₂
30	2556	SO ₂	NO ₂	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2557	SO ₂	SCH ₃	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2558	SO ₂	SO ₂ CH ₃	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2559	SO ₂	SO ₂ CH ₂ CH ₃	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2560	SO ₂	CH ₃	OCH(CH ₃) ₂	CH(CH ₃) ₂
35	2561	SO ₂	CF ₃	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2562	SO ₂	OCHF ₂	OCH(CH ₃) ₂	CH(CH ₃) ₂
	2563	bond	F	OCH(CH ₃) ₂	C(CH ₃) ₃
	2564	bond	Cl	OCH(CH ₃) ₂	C(CH ₃) ₃
	2565	bond	Br	OCH(CH ₃) ₂	C(CH ₃) ₃
40	2566	bond	NO ₂	OCH(CH ₃) ₂	C(CH ₃) ₃
	2567	bond	SCH ₃	OCH(CH ₃) ₂	C(CH ₃) ₃
	2568	bond	SO ₂ CH ₃	OCH(CH ₃) ₂	C(CH ₃) ₃
	2569	bond	SO ₂ CH ₂ CH ₃	OCH(CH ₃) ₂	C(CH ₃) ₃
	2569	bond	SO ₂ CH ₂ CH ₃	OCH(CH ₃) ₂	C(CH ₃) ₃

	n	X	R ⁴	R ¹⁰	R ¹¹
5	2570	bond	CH ₃	OCH(CH ₃) ₂	C(CH ₃) ₃
	2571	bond	CF ₃	OCH(CH ₃) ₂	C(CH ₃) ₃
	2572	bond	OCHF ₂	OCH(CH ₃) ₂	C(CH ₃) ₃
	2573	CH ₂	F	OCH(CH ₃) ₂	C(CH ₃) ₃
	2574	CH ₂	Cl	OCH(CH ₃) ₂	C(CH ₃) ₃
10	2575	CH ₂	Br	OCH(CH ₃) ₂	C(CH ₃) ₃
	2576	CH ₂	NO ₂	OCH(CH ₃) ₂	C(CH ₃) ₃
	2577	CH ₂	SCH ₃	OCH(CH ₃) ₂	C(CH ₃) ₃
	2578	CH ₂	SO ₂ CH ₃	OCH(CH ₃) ₂	C(CH ₃) ₃
	2579	CH ₂	SO ₂ CH ₂ CH ₃	OCH(CH ₃) ₂	C(CH ₃) ₃
15	2580	CH ₂	CH ₃	OCH(CH ₃) ₂	C(CH ₃) ₃
	2581	CH ₂	CF ₃	OCH(CH ₃) ₂	C(CH ₃) ₃
	2582	CH ₂	OCHF ₂	OCH(CH ₃) ₂	C(CH ₃) ₃
	2583	O	F	OCH(CH ₃) ₂	C(CH ₃) ₃
	2584	O	Cl	OCH(CH ₃) ₂	C(CH ₃) ₃
20	2585	O	Br	OCH(CH ₃) ₂	C(CH ₃) ₃
	2586	O	NO ₂	OCH(CH ₃) ₂	C(CH ₃) ₃
	2587	O	SCH ₃	OCH(CH ₃) ₂	C(CH ₃) ₃
	2588	O	SO ₂ CH ₃	OCH(CH ₃) ₂	C(CH ₃) ₃
	2589	O	SO ₂ CH ₂ CH ₃	OCH(CH ₃) ₂	C(CH ₃) ₃
25	2590	O	CH ₃	OCH(CH ₃) ₂	C(CH ₃) ₃
	2591	O	CF ₃	OCH(CH ₃) ₂	C(CH ₃) ₃
	2592	O	OCHF ₂	OCH(CH ₃) ₂	C(CH ₃) ₃
	2593	S	F	OCH(CH ₃) ₂	C(CH ₃) ₃
	2594	S	Cl	OCH(CH ₃) ₂	C(CH ₃) ₃
30	2595	S	Br	OCH(CH ₃) ₂	C(CH ₃) ₃
	2596	S	NO ₂	OCH(CH ₃) ₂	C(CH ₃) ₃
	2597	S	SCH ₃	OCH(CH ₃) ₂	C(CH ₃) ₃
	2598	S	SO ₂ CH ₃	OCH(CH ₃) ₂	C(CH ₃) ₃
	2599	S	SO ₂ CH ₂ CH ₃	OCH(CH ₃) ₂	C(CH ₃) ₃
35	2600	S	CH ₃	OCH(CH ₃) ₂	C(CH ₃) ₃
	2601	S	CF ₃	OCH(CH ₃) ₂	C(CH ₃) ₃
	2602	S	OCHF ₂	OCH(CH ₃) ₂	C(CH ₃) ₃
	2603	SO ₂	F	OCH(CH ₃) ₂	C(CH ₃) ₃
	2604	SO ₂	Cl	OCH(CH ₃) ₂	C(CH ₃) ₃
40	2605	SO ₂	Br	OCH(CH ₃) ₂	C(CH ₃) ₃
	2606	SO ₂	NO ₂	OCH(CH ₃) ₂	C(CH ₃) ₃
	2607	SO ₂	SCH ₃	OCH(CH ₃) ₂	C(CH ₃) ₃
	2608	SO ₂	SO ₂ CH ₃	OCH(CH ₃) ₂	C(CH ₃) ₃

	n	X	R ⁴	R ¹⁰	R ¹¹
	2609	SO ₂	SO ₂ CH ₂ CH ₃	OCH(CH ₃) ₂	C(CH ₃) ₃
	2610	SO ₂	CH ₃	OCH(CH ₃) ₂	C(CH ₃) ₃
5	2611	SO ₂	CF ₃	OCH(CH ₃) ₂	C(CH ₃) ₃
	2612	SO ₂	OCHF ₂	OCH(CH ₃) ₂	C(CH ₃) ₃
	2613	bond	F	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2614	bond	Cl	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2615	bond	Br	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
10	2616	bond	NO ₂	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2617	bond	SCH ₃	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2618	bond	SO ₂ CH ₃	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2619	bond	SO ₂ CH ₂ CH ₃	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
15	2620	bond	CH ₃	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2621	bond	CF ₃	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2622	bond	OCHF ₂	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2623	CH ₂	F	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
20	2624	CH ₂	Cl	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2625	CH ₂	Br	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2626	CH ₂	NO ₂	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2627	CH ₂	SCH ₃	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
25	2628	CH ₂	SO ₂ CH ₃	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2629	CH ₂	SO ₂ CH ₂ CH ₃	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2630	CH ₂	CH ₃	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2631	CH ₂	CF ₃	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2632	CH ₂	OCHF ₂	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
30	2633	O	F	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2634	O	Cl	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2635	O	Br	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2636	O	NO ₂	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
35	2637	O	SCH ₃	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2638	O	SO ₂ CH ₃	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2639	O	SO ₂ CH ₂ CH ₃	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2640	O	CH ₃	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
40	2641	O	CF ₃	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2642	O	OCHF ₂	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2643	S	F	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2644	S	Cl	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2645	S	Br	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
45	2646	S	NO ₂	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2647	S	SCH ₃	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂

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	n	X	R ⁴	R ¹⁰	R ¹¹
5	2648	S	SO ₂ CH ₃	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2649	S	SO ₂ CH ₂ CH ₃	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2650	S	CH ₃	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2651	S	CF ₃	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2652	S	OCHF ₂	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
10	2653	SO ₂	F	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2654	SO ₂	Cl	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2655	SO ₂	Br	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2656	SO ₂	NO ₂	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2657	SO ₂	SCH ₃	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
15	2658	SO ₂	SO ₂ CH ₃	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2659	SO ₂	SO ₂ CH ₂ CH ₃	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2660	SO ₂	CH ₃	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2661	SO ₂	CF ₃	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
	2662	SO ₂	OCHF ₂	OCH ₂ C ₆ H ₅	CH(CH ₃) ₂
20	2663	bond	F	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2664	bond	Cl	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2665	bond	Br	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2666	bond	NO ₂	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2667	bond	SCH ₃	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
25	2668	bond	SO ₂ CH ₃	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2669	bond	SO ₂ CH ₂ CH ₃	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2670	bond	CH ₃	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2671	bond	CF ₃	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2672	bond	OCHF ₂	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
30	2673	CH ₂	F	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2674	CH ₂	Cl	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2675	CH ₂	Br	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2676	CH ₂	NO ₂	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2677	CH ₂	SCH ₃	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
35	2678	CH ₂	SO ₂ CH ₃	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2679	CH ₂	SO ₂ CH ₂ CH ₃	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2680	CH ₂	CH ₃	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2681	CH ₂	CF ₃	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2682	CH ₂	OCHF ₂	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
40	2683	O	F	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2684	O	Cl	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2685	O	Br	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2686	O	NO ₂	OCH ₂ C ₆ H ₅	C(CH ₃) ₃

	n	X	R ⁴	R ¹⁰	R ¹¹
5	2687	O	SCH ₃	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2688	O	SO ₂ CH ₃	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2689	O	SO ₂ CH ₂ CH ₃	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2690	O	CH ₃	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2691	O	CF ₃	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
10	2692	O	OCHF ₂	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2693	S	F	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2694	S	Cl	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2695	S	Br	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2696	S	NO ₂	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
15	2697	S	SCH ₃	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2698	S	SO ₂ CH ₃	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2699	S	SO ₂ CH ₂ CH ₃	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2700	S	CH ₃	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2701	S	CF ₃	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
20	2702	S	OCHF ₂	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2703	SO ₂	F	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2704	SO ₂	Cl	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2705	SO ₂	Br	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2706	SO ₂	NO ₂	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
25	2707	SO ₂	SCH ₃	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2708	SO ₂	SO ₂ CH ₃	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2709	SO ₂	SO ₂ CH ₂ CH ₃	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2710	SO ₂	CH ₃	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2711	SO ₂	CF ₃	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
30	2712	SO ₂	OCHF ₂	OCH ₂ C ₆ H ₅	C(CH ₃) ₃
	2713	bond	F	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2714	bond	Cl	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2715	bond	Br	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2716	bond	NO ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
35	2717	bond	SCH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2718	bond	SO ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2719	bond	SO ₂ CH ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2720	bond	CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2721	bond	CF ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
40	2722	bond	OCHF ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2723	CH ₂	F	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2724	CH ₂	Cl	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2725	CH ₂	Br	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2725	CH ₂	Br	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂

	n	X	R ⁴	R ¹⁰	R ¹¹
5	2726	CH ₂	NO ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2727	CH ₂	SCH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2728	CH ₂	SO ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2729	CH ₂	SO ₂ CH ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2730	CH ₂	CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
10	2731	CH ₂	CF ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2732	CH ₂	OCHF ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2733	O	F	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2734	O	Cl	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2735	O	Br	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
15	2736	O	NO ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2737	O	SCH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2738	O	SO ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2739	O	SO ₂ CH ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2740	O	CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
20	2741	O	CF ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2742	O	OCHF ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2743	S	F	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2744	S	Cl	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2745	S	Br	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
25	2746	S	NO ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2747	S	SCH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2748	S	SO ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2749	S	SO ₂ CH ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2750	S	CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
30	2751	S	CF ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2752	S	OCHF ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2753	SO ₂	F	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2754	SO ₂	Cl	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2755	SO ₂	Br	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
35	2756	SO ₂	NO ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2757	SO ₂	SCH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2758	SO ₂	SO ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2759	SO ₂	SO ₂ CH ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2760	SO ₂	CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
40	2761	SO ₂	CF ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2762	SO ₂	OCHF ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	CH(CH ₃) ₂
	2763	bond	F	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2764	bond	Cl	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2764	bond	Cl	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃

	n	X	R ⁴	R ¹⁰	R ¹¹
5	2765	bond	Br	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2766	bond	NO ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2767	bond	SCH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2768	bond	SO ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2769	bond	SO ₂ CH ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
10	2770	bond	CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2771	bond	CF ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2772	bond	OCHF ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2773	CH ₂	F	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2774	CH ₂	Cl	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
15	2775	CH ₂	Br	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2776	CH ₂	NO ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2777	CH ₂	SCH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2778	CH ₂	SO ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2779	CH ₂	SO ₂ CH ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
20	2780	CH ₂	CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2781	CH ₂	CF ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2782	CH ₂	OCHF ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2783	O	F	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2784	O	Cl	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
25	2785	O	Br	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2786	O	NO ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2787	O	SCH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2788	O	SO ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2789	O	SO ₂ CH ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
30	2790	O	CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2791	O	CF ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2792	O	OCHF ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2793	S	F	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2794	S	Cl	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
35	2795	S	Br	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2796	S	NO ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2797	S	SCH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2798	S	SO ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2799	S	SO ₂ CH ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
40	2800	S	CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2801	S	CF ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2802	S	OCHF ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2803	SO ₂	F	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2803	SO ₂	F	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃

	n	X	R ⁴	R ¹⁰	R ¹¹
5	2804	SO ₂	Cl	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2805	SO ₂	Br	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2806	SO ₂	NO ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2807	SO ₂	SCH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2808	SO ₂	SO ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
10	2809	SO ₂	SO ₂ CH ₂ CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2810	SO ₂	CH ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2811	SO ₂	CF ₃	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
	2812	SO ₂	OCHF ₂	OSO ₂ (4-CH ₃ -C ₆ H ₄)	C(CH ₃) ₃
15	2813	bond	F	SCH ₃	CH(CH ₃) ₂
	2814	bond	Cl	SCH ₃	CH(CH ₃) ₂
	2815	bond	Br	SCH ₃	CH(CH ₃) ₂
	2816	bond	NO ₂	SCH ₃	CH(CH ₃) ₂
	2817	bond	SCH ₃	SCH ₃	CH(CH ₃) ₂
20	2818	bond	SO ₂ CH ₃	SCH ₃	CH(CH ₃) ₂
	2819	bond	SO ₂ CH ₂ CH ₃	SCH ₃	CH(CH ₃) ₂
	2820	bond	CH ₃	SCH ₃	CH(CH ₃) ₂
	2821	bond	CF ₃	SCH ₃	CH(CH ₃) ₂
	2822	bond	OCHF ₂	SCH ₃	CH(CH ₃) ₂
25	2823	CH ₂	F	SCH ₃	CH(CH ₃) ₂
	2824	CH ₂	Cl	SCH ₃	CH(CH ₃) ₂
	2825	CH ₂	Br	SCH ₃	CH(CH ₃) ₂
	2826	CH ₂	NO ₂	SCH ₃	CH(CH ₃) ₂
	2827	CH ₂	SCH ₃	SCH ₃	CH(CH ₃) ₂
30	2828	CH ₂	SO ₂ CH ₃	SCH ₃	CH(CH ₃) ₂
	2829	CH ₂	SO ₂ CH ₂ CH ₃	SCH ₃	CH(CH ₃) ₂
	2830	CH ₂	CH ₃	SCH ₃	CH(CH ₃) ₂
35	2831	CH ₂	CF ₃	SCH ₃	CH(CH ₃) ₂
	2832	CH ₂	OCHF ₂	SCH ₃	CH(CH ₃) ₂
	2833	O	F	SCH ₃	CH(CH ₃) ₂
	2834	O	Cl	SCH ₃	CH(CH ₃) ₂
40	2835	O	Br	SCH ₃	CH(CH ₃) ₂
	2836	O	NO ₂	SCH ₃	CH(CH ₃) ₂
	2837	O	SCH ₃	SCH ₃	CH(CH ₃) ₂
	2838	O	SO ₂ CH ₃	SCH ₃	CH(CH ₃) ₂
	2839	O	SO ₂ CH ₂ CH ₃	SCH ₃	CH(CH ₃) ₂
45	2840	O	CH ₃	SCH ₃	CH(CH ₃) ₂
	2841	O	CF ₃	SCH ₃	CH(CH ₃) ₂
	2842	O	OCHF ₂	SCH ₃	CH(CH ₃) ₂

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	n	X	R ⁴	R ¹⁰	R ¹¹
5	2843	S	F	SCH ₃	CH(CH ₃) ₂
	2844	S	Cl	SCH ₃	CH(CH ₃) ₂
	2845	S	Br	SCH ₃	CH(CH ₃) ₂
	2846	S	NO ₂	SCH ₃	CH(CH ₃) ₂
	2847	S	SCH ₃	SCH ₃	CH(CH ₃) ₂
10	2848	S	SO ₂ CH ₃	SCH ₃	CH(CH ₃) ₂
	2849	S	SO ₂ CH ₂ CH ₃	SCH ₃	CH(CH ₃) ₂
	2850	S	CH ₃	SCH ₃	CH(CH ₃) ₂
	2851	S	CF ₃	SCH ₃	CH(CH ₃) ₂
	2852	S	OCHF ₂	SCH ₃	CH(CH ₃) ₂
15	2853	SO ₂	F	SCH ₃	CH(CH ₃) ₂
	2854	SO ₂	Cl	SCH ₃	CH(CH ₃) ₂
	2855	SO ₂	Br	SCH ₃	CH(CH ₃) ₂
	2856	SO ₂	NO ₂	SCH ₃	CH(CH ₃) ₂
	2857	SO ₂	SCH ₃	SCH ₃	CH(CH ₃) ₂
20	2858	SO ₂	SO ₂ CH ₃	SCH ₃	CH(CH ₃) ₂
	2859	SO ₂	SO ₂ CH ₂ CH ₃	SCH ₃	CH(CH ₃) ₂
	2860	SO ₂	CH ₃	SCH ₃	CH(CH ₃) ₂
	2861	SO ₂	CF ₃	SCH ₃	CH(CH ₃) ₂
	2862	SO ₂	OCHF ₂	SCH ₃	CH(CH ₃) ₂
25	2863	bond	F	SCH ₃	C(CH ₃) ₃
	2864	bond	Cl	SCH ₃	C(CH ₃) ₃
	2865	bond	Br	SCH ₃	C(CH ₃) ₃
	2866	bond	NO ₂	SCH ₃	C(CH ₃) ₃
	2867	bond	SCH ₃	SCH ₃	C(CH ₃) ₃
30	2868	bond	SO ₂ CH ₃	SCH ₃	C(CH ₃) ₃
	2869	bond	SO ₂ CH ₂ CH ₃	SCH ₃	C(CH ₃) ₃
	2870	bond	CH ₃	SCH ₃	C(CH ₃) ₃
	2871	bond	CF ₃	SCH ₃	C(CH ₃) ₃
	2872	bond	OCHF ₂	SCH ₃	C(CH ₃) ₃
35	2873	CH ₂	F	SCH ₃	C(CH ₃) ₃
	2874	CH ₂	Cl	SCH ₃	C(CH ₃) ₃
	2875	CH ₂	Br	SCH ₃	C(CH ₃) ₃
	2876	CH ₂	NO ₂	SCH ₃	C(CH ₃) ₃
	2877	CH ₂	SCH ₃	SCH ₃	C(CH ₃) ₃
40	2878	CH ₂	SO ₂ CH ₃	SCH ₃	C(CH ₃) ₃
	2879	CH ₂	SO ₂ CH ₂ CH ₃	SCH ₃	C(CH ₃) ₃
	2880	CH ₂	CH ₃	SCH ₃	C(CH ₃) ₃
	2881	CH ₂	CF ₃	SCH ₃	C(CH ₃) ₃

	n	X	R ⁴	R ¹⁰	R ¹¹
5	2882	CH ₂	OCHF ₂	SCH ₃	C(CH ₃) ₃
	2883	O	F	SCH ₃	C(CH ₃) ₃
	2884	O	Cl	SCH ₃	C(CH ₃) ₃
	2885	O	Br	SCH ₃	C(CH ₃) ₃
	2886	O	NO ₂	SCH ₃	C(CH ₃) ₃
10	2887	O	SCH ₃	SCH ₃	C(CH ₃) ₃
	2888	O	SO ₂ CH ₃	SCH ₃	C(CH ₃) ₃
	2889	O	SO ₂ CH ₂ CH ₃	SCH ₃	C(CH ₃) ₃
	2890	O	CH ₃	SCH ₃	C(CH ₃) ₃
	2891	O	CF ₃	SCH ₃	C(CH ₃) ₃
15	2892	O	OCHF ₂	SCH ₃	C(CH ₃) ₃
	2893	S	F	SCH ₃	C(CH ₃) ₃
	2894	S	Cl	SCH ₃	C(CH ₃) ₃
	2895	S	Br	SCH ₃	C(CH ₃) ₃
	2896	S	NO ₂	SCH ₃	C(CH ₃) ₃
20	2897	S	SCH ₃	SCH ₃	C(CH ₃) ₃
	2898	S	SO ₂ CH ₃	SCH ₃	C(CH ₃) ₃
	2899	S	SO ₂ CH ₂ CH ₃	SCH ₃	C(CH ₃) ₃
	2900	S	CH ₃	SCH ₃	C(CH ₃) ₃
	2901	S	CF ₃	SCH ₃	C(CH ₃) ₃
25	2902	S	OCHF ₂	SCH ₃	C(CH ₃) ₃
	2903	SO ₂	F	SCH ₃	C(CH ₃) ₃
	2904	SO ₂	Cl	SCH ₃	C(CH ₃) ₃
	2905	SO ₂	Br	SCH ₃	C(CH ₃) ₃
	2906	SO ₂	NO ₂	SCH ₃	C(CH ₃) ₃
30	2907	SO ₂	SCH ₃	SCH ₃	C(CH ₃) ₃
	2908	SO ₂	SO ₂ CH ₃	SCH ₃	C(CH ₃) ₃
	2909	SO ₂	SO ₂ CH ₂ CH ₃	SCH ₃	C(CH ₃) ₃
	2910	SO ₂	CH ₃	SCH ₃	C(CH ₃) ₃
	2911	SO ₂	CF ₃	SCH ₃	C(CH ₃) ₃
35	2912	SO ₂	OCHF ₂	SCH ₃	C(CH ₃) ₃
	2913	bond	F	Cl	CH(CH ₃) ₂
	2914	bond	Cl	Cl	CH(CH ₃) ₂
	2915	bond	Br	Cl	CH(CH ₃) ₂
	2916	bond	NO ₂	Cl	CH(CH ₃) ₂
40	2917	bond	SCH ₃	Cl	CH(CH ₃) ₂
	2918	bond	SO ₂ CH ₃	Cl	CH(CH ₃) ₂
	2919	bond	SO ₂ CH ₂ CH ₃	Cl	CH(CH ₃) ₂
	2920	bond	CH ₃	Cl	CH(CH ₃) ₂

	n	X	R ⁴	R ¹⁰	R ¹¹
	2921	bond	CF ₃	Cl	CH(CH ₃) ₂
	2922	bond	OCHF ₂	Cl	CH(CH ₃) ₂
5	2923	CH ₂	F	Cl	CH(CH ₃) ₂
	2924	CH ₂	Cl	Cl	CH(CH ₃) ₂
	2925	CH ₂	Br	Cl	CH(CH ₃) ₂
	2926	CH ₂	NO ₂	Cl	CH(CH ₃) ₂
10	2927	CH ₂	SCH ₃	Cl	CH(CH ₃) ₂
	2928	CH ₂	SO ₂ CH ₃	Cl	CH(CH ₃) ₂
	2929	CH ₂	SO ₂ CH ₂ CH ₃	Cl	CH(CH ₃) ₂
	2930	CH ₂	CH ₃	Cl	CH(CH ₃) ₂
	2931	CH ₂	CF ₃	Cl	CH(CH ₃) ₂
15	2932	CH ₂	OCHF ₂	Cl	CH(CH ₃) ₂
	2933	O	F	Cl	CH(CH ₃) ₂
	2934	O	Cl	Cl	CH(CH ₃) ₂
	2935	O	Br	Cl	CH(CH ₃) ₂
20	2936	O	NO ₂	Cl	CH(CH ₃) ₂
	2937	O	SCH ₃	Cl	CH(CH ₃) ₂
	2938	O	SO ₂ CH ₃	Cl	CH(CH ₃) ₂
	2939	O	SO ₂ CH ₂ CH ₃	Cl	CH(CH ₃) ₂
25	2940	O	CH ₃	Cl	CH(CH ₃) ₂
	2941	O	CF ₃	Cl	CH(CH ₃) ₂
	2942	O	OCHF ₂	Cl	CH(CH ₃) ₂
	2943	S	F	Cl	CH(CH ₃) ₂
	2944	S	Cl	Cl	CH(CH ₃) ₂
30	2945	S	Br	Cl	CH(CH ₃) ₂
	2946	S	NO ₂	Cl	CH(CH ₃) ₂
	2947	S	SCH ₃	Cl	CH(CH ₃) ₂
	2948	S	SO ₂ CH ₃	Cl	CH(CH ₃) ₂
35	2949	S	SO ₂ CH ₂ CH ₃	Cl	CH(CH ₃) ₂
	2950	S	CH ₃	Cl	CH(CH ₃) ₂
	2951	S	CF ₃	Cl	CH(CH ₃) ₂
	2952	S	OCHF ₂	Cl	CH(CH ₃) ₂
40	2953	SO ₂	F	Cl	CH(CH ₃) ₂
	2954	SO ₂	Cl	Cl	CH(CH ₃) ₂
	2955	SO ₂	Br	Cl	CH(CH ₃) ₂
	2956	SO ₂	NO ₂	Cl	CH(CH ₃) ₂
	2957	SO ₂	SCH ₃	Cl	CH(CH ₃) ₂
45	2958	SO ₂	SO ₂ CH ₃	Cl	CH(CH ₃) ₂
	2959	SO ₂	SO ₂ CH ₂ CH ₃	Cl	CH(CH ₃) ₂

	n	X	R ⁴	R ¹⁰	R ¹¹
5	2960	SO ₂	CH ₃	Cl	CH(CH ₃) ₂
	2961	SO ₂	CF ₃	Cl	CH(CH ₃) ₂
	2962	SO ₂	OCHF ₂	Cl	CH(CH ₃) ₂
	2963	bond	F	Cl	C(CH ₃) ₃
	2964	bond	Cl	Cl	C(CH ₃) ₃
10	2965	bond	Br	Cl	C(CH ₃) ₃
	2966	bond	NO ₂	Cl	C(CH ₃) ₃
	2967	bond	SCH ₃	Cl	C(CH ₃) ₃
	2968	bond	SO ₂ CH ₃	Cl	C(CH ₃) ₃
	2969	bond	SO ₂ CH ₂ CH ₃	Cl	C(CH ₃) ₃
15	2970	bond	CH ₃	Cl	C(CH ₃) ₃
	2971	bond	CF ₃	Cl	C(CH ₃) ₃
	2972	bond	OCHF ₂	Cl	C(CH ₃) ₃
	2973	CH ₂	F	Cl	C(CH ₃) ₃
	2974	CH ₂	Cl	Cl	C(CH ₃) ₃
20	2975	CH ₂	Br	Cl	C(CH ₃) ₃
	2976	CH ₂	NO ₂	Cl	C(CH ₃) ₃
	2977	CH ₂	SCH ₃	Cl	C(CH ₃) ₃
	2978	CH ₂	SO ₂ CH ₃	Cl	C(CH ₃) ₃
	2979	CH ₂	SO ₂ CH ₂ CH ₃	Cl	C(CH ₃) ₃
25	2980	CH ₂	CH ₃	Cl	C(CH ₃) ₃
	2981	CH ₂	CF ₃	Cl	C(CH ₃) ₃
	2982	CH ₂	OCHF ₂	Cl	C(CH ₃) ₃
	2983	O	F	Cl	C(CH ₃) ₃
	2984	O	Cl	Cl	C(CH ₃) ₃
30	2985	O	Br	Cl	C(CH ₃) ₃
	2986	O	NO ₂	Cl	C(CH ₃) ₃
	2987	O	SCH ₃	Cl	C(CH ₃) ₃
	2988	O	SO ₂ CH ₃	Cl	C(CH ₃) ₃
	2989	O	SO ₂ CH ₂ CH ₃	Cl	C(CH ₃) ₃
35	2990	O	CH ₃	Cl	C(CH ₃) ₃
	2991	O	CF ₃	Cl	C(CH ₃) ₃
	2992	O	OCHF ₂	Cl	C(CH ₃) ₃
	2993	S	F	Cl	C(CH ₃) ₃
	2994	S	Cl	Cl	C(CH ₃) ₃
40	2995	S	Br	Cl	C(CH ₃) ₃
	2996	S	NO ₂	Cl	C(CH ₃) ₃
	2997	S	SCH ₃	Cl	C(CH ₃) ₃
	2998	S	SO ₂ CH ₃	Cl	C(CH ₃) ₃

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n	X	R ⁴	R ¹⁰	R ¹¹
2999	S	SO ₂ CH ₂ CH ₃	Cl	C(CH ₃) ₃
3000	S	CH ₃	Cl	C(CH ₃) ₃
5 3001	S	CF ₃	Cl	C(CH ₃) ₃
3002	S	OCHF ₂	Cl	C(CH ₃) ₃
3003	SO ₂	F	Cl	C(CH ₃) ₃
3004	SO ₂	Cl	Cl	C(CH ₃) ₃
10 3005	SO ₂	Br	Cl	C(CH ₃) ₃
3006	SO ₂	NO ₂	Cl	C(CH ₃) ₃
3007	SO ₂	SCH ₃	Cl	C(CH ₃) ₃
3008	SO ₂	SO ₂ CH ₃	Cl	C(CH ₃) ₃
3009	SO ₂	SO ₂ CH ₂ CH ₃	Cl	C(CH ₃) ₃
15 3010	SO ₂	CH ₃	Cl	C(CH ₃) ₃
3011	SO ₂	CF ₃	Cl	C(CH ₃) ₃
3012	SO ₂	OCHF ₂	Cl	C(CH ₃) ₃

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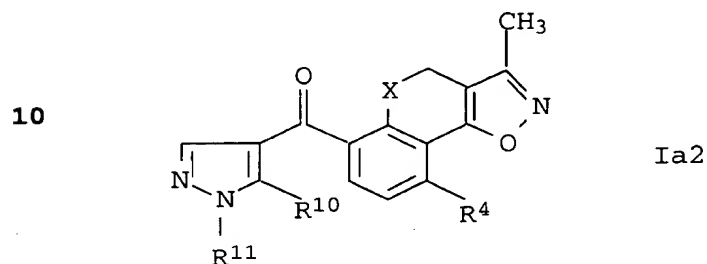
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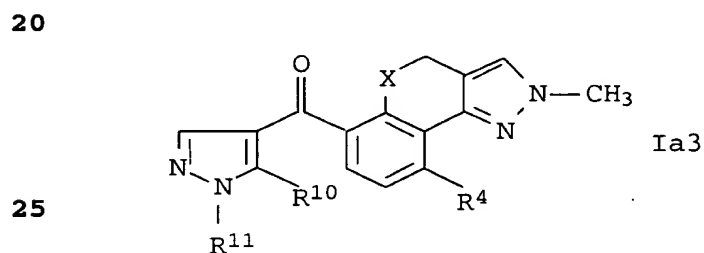
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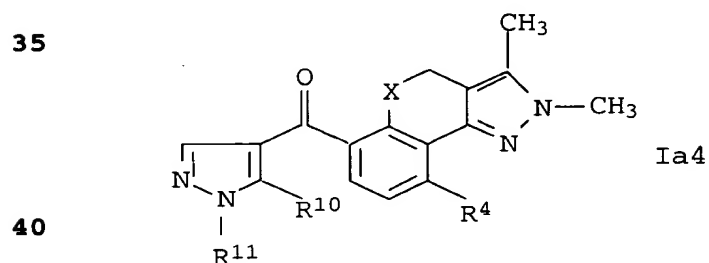
Very particular preference is also given to the compounds of the formula Ia2 (\equiv Ia where R^1 , R^2 , R^5 and $R^{12} = H$, $R^3 = CH_3$, $l = 1$), in particular to the compounds Ia2.n, where the variables X, R^4 , R^{10} and R^{11} are as defined in Table 1.



15 Very particular preference is also given to the compounds of the formula Ia3 (\equiv Ia where R^1 , R^2 , R^5 and $R^{12} = H$, $R^3 = CH_3$, $l = 1$), in particular to the compounds Ia3.n, where the variables X, R^4 , R^{10} and R^{11} are as defined in Table 1.

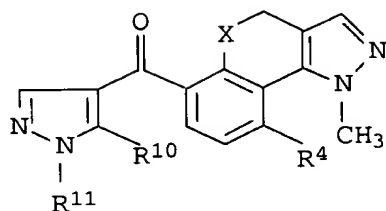


30 Very particular preference is also given to the compounds of the formula Ia4 (\equiv Ia where R^1 , R^2 , R^5 and $R^{12} = H$, $R^3 = CH_3$, $l = 2$), in particular to the compounds Ia4.n, where the variables X, R^4 , R^{10} and R^{11} are as defined in Table 1.



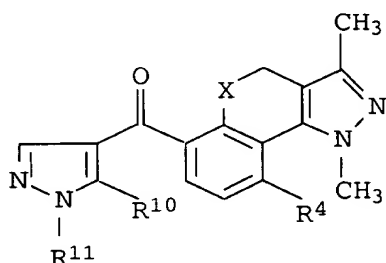
45 Very particular preference is also given to the compounds of the formula Ia5 (\equiv Ia where R^1 , R^2 , R^5 and $R^{12} = H$, $R^3 = CH_3$, $l = 1$), in particular to the compounds Ia5.n, where the variables X, R^4 , R^{10} and R^{11} are as defined in Table 1.

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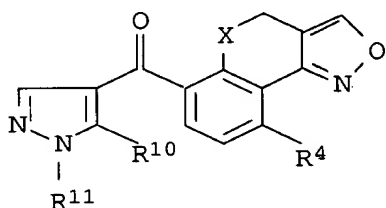
Ia5

Very particular preference is also given to the compounds of the formula Ia6 (\equiv Ia where R^1 , R^2 , R^5 and $R^{12} = H$, $R^3 = CH_3$, $l = 2$), in particular to the compounds Ia6.n, where the variables X, R^4 , R^{10} and R^{11} are as defined in Table 1.



Ia6

Very particular preference is also given to the compounds of the formula Ia7 (\equiv Ia where R^1 , R^2 , R^5 and $R^{12} = H$, $l = 0$), in particular to the compounds Ia7.n, where the variables X, R^4 , R^{10} and R^{11} are as defined in Table 1.

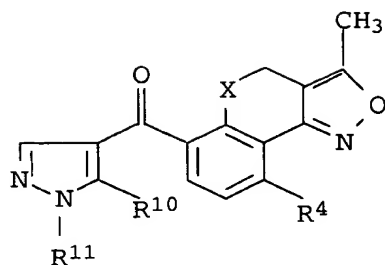


Ia7

35 Very particular preference is also given to the compounds of the formula Ia8 (\equiv Ia where R^1 , R^2 , R^5 and $R^{12} = H$, $R^3 = CH^3$, $l = 1$), in particular to the compounds Ia8.n, where the variables X, R^4 , R^{10} and R^{11} are as defined in Table 1.

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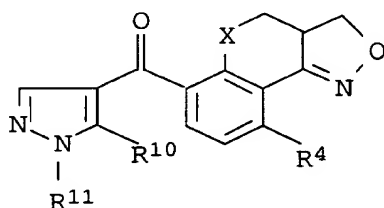
5



Ia8

10 Very particular preference is also given to the compounds of the formula Ia9 (\equiv Ia where R^1 , R^2 , R^5 and $R^{12} = H$, $l = 0$), in particular to the compounds Ia9.n, where the variables X, R^4 , R^{10} and R^{11} are as defined in Table 1.

15



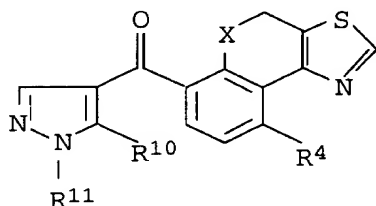
Ia9

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Very particular preference is also given to the compounds of the formula Ia10 (\equiv Ia where R^1 , R^2 , R^5 and $R^{12} = H$, $l = 0$), in

25 particular to the compounds Ia10.n, where the variables X, R^4 , R^{10} and R^{11} are as defined in Table 1.

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Ia10

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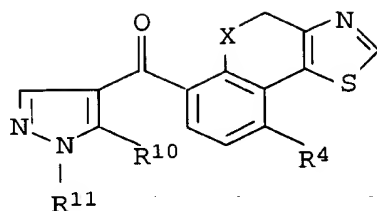
Very particular preference is also given to the compounds of the formula Ia11 (\equiv Ia where R^1 , R^2 , R^5 and $R^{12} = H$, $l = 0$), in particular to the compounds Ia11.n, where the variables X, R^4 , R^{10} and R^{11} are as defined in Table 1.

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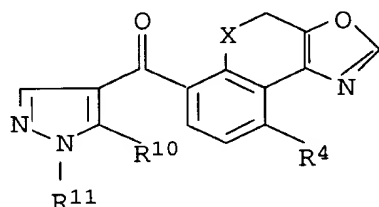
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Ia11

Very particular preference is also given to the compounds of the
10 formula Ia12 (\equiv Ia where R^1 , R^2 , R^5 and $R^{12} = H$, $l = 0$), in
particular to the compounds Ia12.n, where the variables X, R^4 , R^{10}
and R^{11} are as defined in Table 1.

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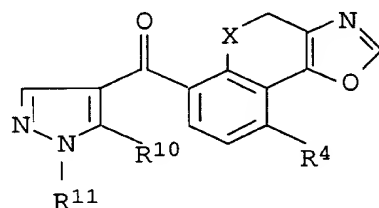


Ia12

20

Very particular preference is also given to the compounds of the
formula Ia13 (\equiv Ia where R^1 , R^2 , R^5 and $R^{12} = H$, $l = 0$), in
particular to the compounds Ia13.n, where the variables X, R^4 , R^{10}
25 and R^{11} are as defined in Table 1.

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Ia13

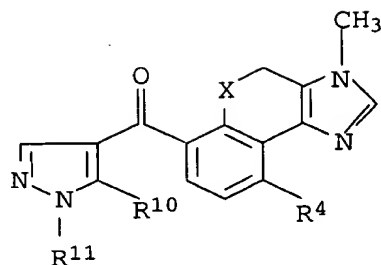
35 Very particular preference is also given to the compounds of the
formula Ia14 (\equiv Ia where R^1 , R^2 , R^5 and $R^{12} = H$, $R^3 = CH_3$, $l = 1$),
in particular to the compounds Ia14.n, where the variables X, R^4 ,
 R^{10} and R^{11} are as defined in Table 1.

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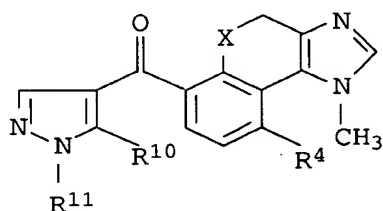
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Ia14

10 Very particular preference is also given to the compounds of the formula Ia15 (\equiv Ia where R^1 , R^2 , R^5 and $R^{12} = H$, $R^3 = CH_3$, $l = 1$), in particular to the compounds Ia15.n, where the variables X, R^4 , R^{10} and R^{11} are as defined in Table 1.

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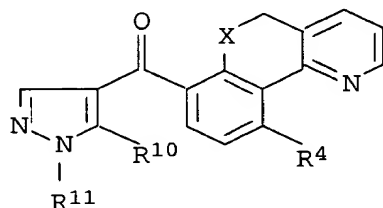


Ia15

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Very particular preference is also given to the compounds of the formula Ia16 (\equiv Ia where R^1 , R^2 , R^5 and $R^{12} = H$, $l = 0$), in particular to the compounds Ia16.n, where the variables X, R^4 , R^{10} and R^{11} are as defined in Table 1.

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Ia16

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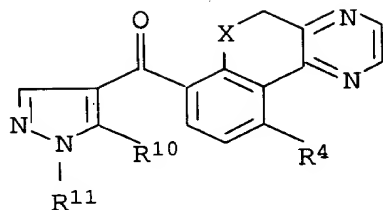
Very particular preference is also given to the compounds of the formula Ia17 (\equiv Ia where R^1 , R^2 , R^5 and $R^{12} = H$, $l = 0$), in particular to the compounds Ia17.n, where the variables X, R^4 , R^{10} and R^{11} are as defined in Table 1.

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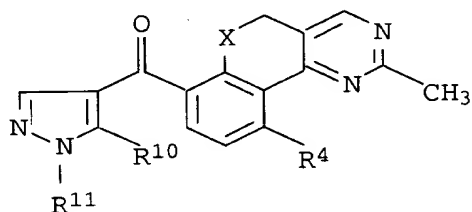
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Ia17

Very particular preference is also given to the compounds of the
10 formula Ia18 (\equiv Ia where R^1 , R^2 , R^5 and $R^{12} = H$, $R^{13} = CH_3$, $l = 1$),
in particular to the compounds Ia18.n, where the variables X, R^4 ,
 R^{10} and R^{11} are as defined in Table 1.

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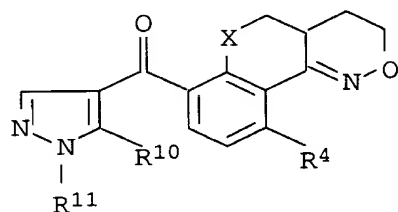


Ia18

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Very particular preference is also given to the compounds of the
formula Ia19 (\equiv Ia where R^1 , R^2 , R^5 and $R^{12} = H$, $l = 0$), in
particular to the compounds Ia19.n, where the variables X, R^4 , R^{10}
25 and R^{11} are as defined in Table 1.

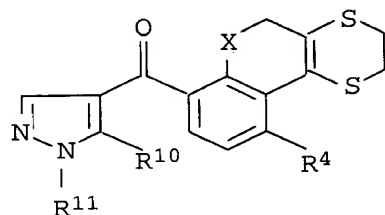
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Ia19

35 Very particular preference is also given to the compounds of the
formula Ia20 (\equiv Ia where R^1 , R^2 , R^5 and $R^{12} = H$, $l = 0$), in
particular to the compounds Ia20.n, where the variables X, R^4 , R^{10}
and R^{11} are as defined in Table 1.

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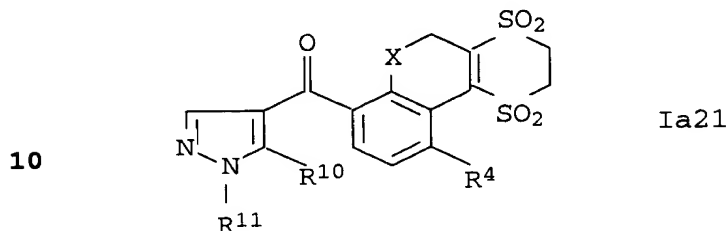
Ia20

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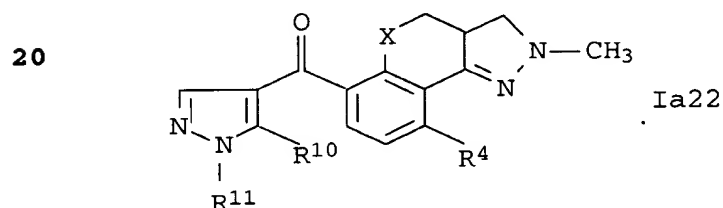
106

Very particular preference is also given to the compounds of the formula Ia21 (\equiv Ia where R^1 , R^2 , R^5 and $R^{12} = H$, $l = 0$), in particular to the compounds Ia21.n, where the variables X, R^4 , R^{10} and R^{11} are as defined in Table 1.

5



15 Very particular preference is also given to the compounds of the formula Ia22 (\equiv Ia where R^1 , R^2 , R^5 and $R^{12} = H$, $R^3 = CH_3$, $l = 1$), in particular to the compounds Ia22.n, where the variables X, R^4 , R^{10} and R^{11} are as defined in Table 1.



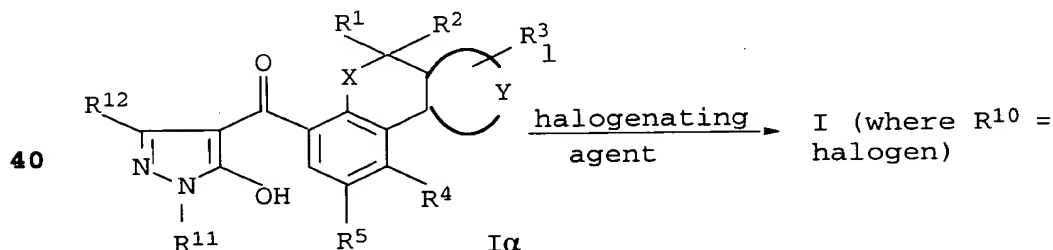
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The tricyclic benzoylpyrazole derivatives of the formula I can be obtained by various routes, for example by one of the following processes:

30

A. Preparation of compounds of the formula I where $R^{10} = \text{halogen}$ by reacting a tricyclic benzoylpyrazole derivative of the formula Ia (\equiv I where $R^{10} = \text{hydroxyl}$) with a halogenating agent:

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Suitable halogenating agents are, for example, phosgene, diphosgene, triphosgene, thionyl chloride, oxalyl chloride, phosphorus oxychloride, phosphorus pentachloride, mesyl

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chloride, chloromethylene-N,N-dimethylammonium chloride, oxalyl bromide, phosphorus oxybromide, etc.

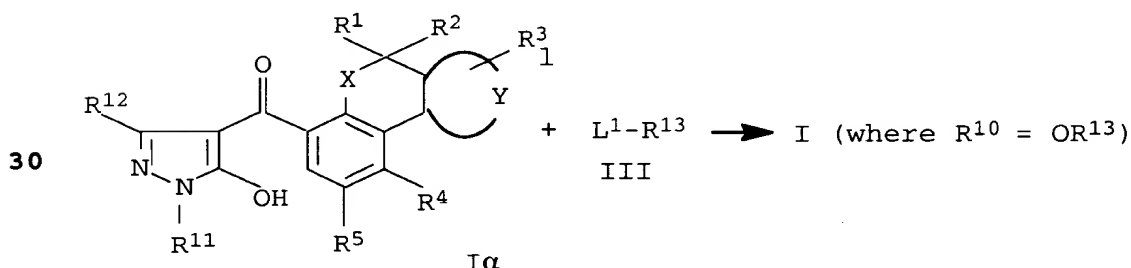
5 The starting materials are generally employed in equimolar amounts. However, it may also be advantageous to employ an excess of one or the other component.

10 Suitable solvents are, for example, chlorinated hydrocarbons, such as methylene chloride or 1,2-dichloroethane, aromatic hydrocarbons, for example toluene, xylene or chlorobenzene, polar aprotic solvents, such as acetonitrile, dimethylformamide or dimethyl sulfoxide, or mixtures of these. However, it is also possible to carry out the reaction in the absence of solvent.

15 The reaction temperature is generally in the range from 0°C to the boiling point of the reaction mixture.

20 Work-up can be carried out in a manner known per se to afford the product.

25 B. Preparation of compounds of the formula I where $R^{10} = OR^{13}$, by reacting a tricyclic benzoylpyrazole derivative of the formula Ia (\equiv I where $R^{10} = \text{hydroxyl}$) with an alkylating agent III.



35 L¹ is a nucleophilically replaceable leaving group, such as halogen, for example chlorine or bromine, hetaryl, for example imidazolyl, carboxylate, for example acetate, or sulfonate, for example mesylate or triflate, etc.

40 The compounds of the formula III can be employed directly, such as, for example, in the case of the carbonyl halides, or be generated in situ, for example activated carboxylic acids (using carboxylic acid and dicyclohexylcarbodiimide etc.).

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108

The starting materials are generally employed in equimolar amounts. However, it may also be advantageous to employ an excess of one or the other component.

5 If appropriate, it may also be advantageous to carry out the reaction in the presence of a base. Here, the reactants and the base are advantageously employed in equimolar amounts. In certain cases, an excess of base, for example from 1.5 to 3 molar equivalents, may be advantageous.

10

Suitable bases are tertiary alkylamines, such as triethylamine, aromatic amines, such as pyridine, alkali metal carbonates, for example sodium carbonate or potassium carbonate, alkali metal bicarbonates, for example sodium bicarbonate and potassium bicarbonate, alkali metal alkoxides, such as sodium methoxide, sodium ethoxide, potassium tert-butoxide, or alkali metal hydrides, for example sodium hydride. Preference is given to using triethylamine or pyridine.

20

Suitable solvents are, for example, chlorinated hydrocarbons, such as methylene chloride or 1,2-dichloroethane, aromatic hydrocarbons, for example toluene, xylene or chlorobenzene, ethers, such as diethyl ether, methyl tert-butyl ether, tetrahydrofuran or dioxane, polar aprotic solvents, such as acetonitrile, dimethylformamide or dimethyl sulfoxide, or esters, such as ethyl acetate, or mixtures of these.

25

The reaction temperature is generally in the range from 0°C to the boiling point of the reaction mixture.

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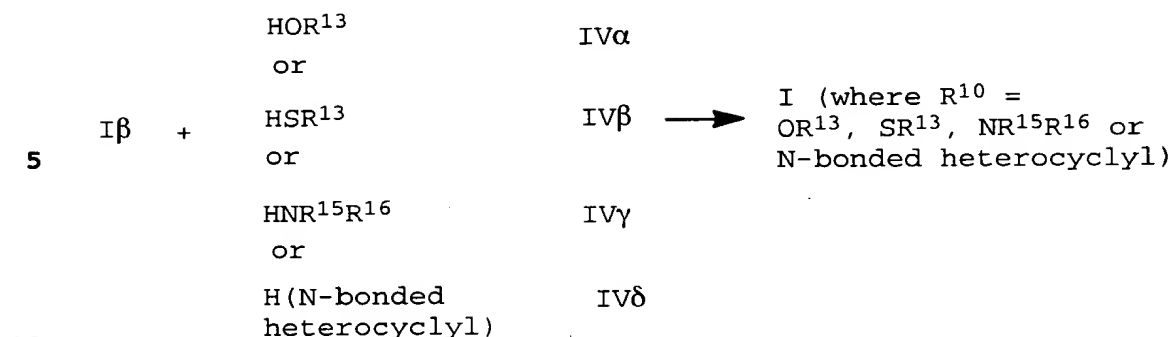
Work-up can be carried out in a manner known per se to afford the product.

35 C. Preparation of compounds of the formula I where $R^{10} = OR^{13}$, SR^{13} , $NR^{15}R^{16}$ or N-bonded heterocyclyl by reacting compounds of the formula $I\beta$ ($\equiv I$ where $R^{10} = \text{halogen}$) with a compound of the formula $IV\alpha$, $IV\beta$, $IV\gamma$ or $IV\delta$, if appropriate in the presence of a base or with prior formation of salt.

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109



The starting materials are generally employed in equimolar amounts. However, it may also be advantageous to employ an excess of one or the other component.

15 If appropriate, it may also be advantageous to carry out the reaction in the presence of a base. Here, the reactants and the base are advantageously employed in equimolar amounts. An excess of base, for example from 1.5 to 3 molar equivalents, based on $I\beta$ (where R^{10} = halogen), may be advantageous in certain cases.

25 Suitable bases are tertiary alkylamines, such as triethylamine, aromatic amines, such as pyridine, alkali metal carbonates, for example sodium carbonate or potassium carbonate, alkali metal bicarbonates, for example sodium bicarbonate and potassium bicarbonate, alkali metal alkoxides, such as sodium methoxide, sodium ethoxide, potassium tert-butoxide, or alkali metal hydrides, for example sodium hydride. Preference is given to using sodium hydride or potassium tert-butoxide.

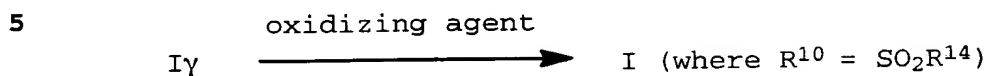
35 Suitable solvents are, for example, chlorinated hydrocarbons, such as methylene chloride or 1,2-dichloroethane, aromatic hydrocarbons, for example toluene, xylene or chlorobenzene, ethers, such as diethyl ether, methyl tert-butyl ether, tetrahydrofuran or dioxane, polar aprotic solvents, such as acetonitrile, dimethylformamide or dimethyl sulfoxide, or mixtures of these.

40 The reaction temperature is generally in the range from 0°C to the boiling point of the reaction mixture.

45 Work-up can be carried out in a manner known per se to afford the product.

110

- D. Preparation of compounds of the formula I where $R^{10} = SO_2R^{14}$ by reacting compounds of the formula I where $R^{10} = SR^{10}$ (I γ) with an oxidizing agent.



- 10 Suitable oxidizing agents are, for example, m-chloroperbenzoic acid, peroxyacetic acid, trifluoroperoxyacetic acid, hydrogen peroxide, if appropriate in the presence of a catalyst, such as tungstate.

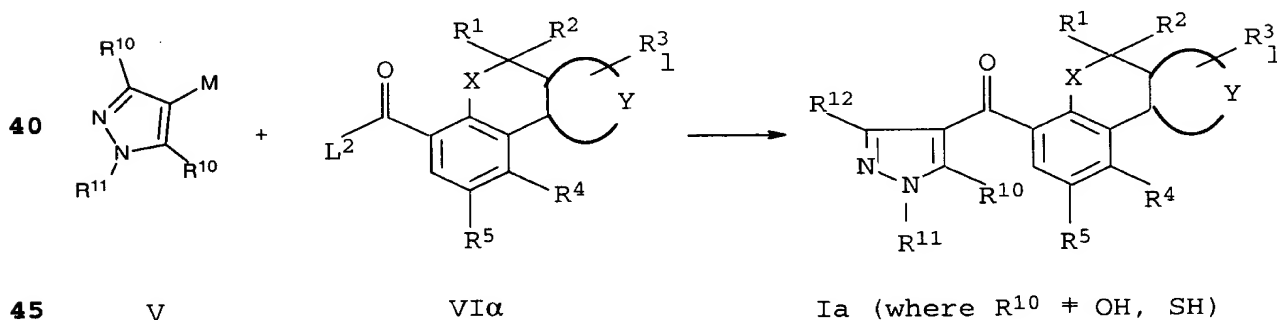
- 15 The starting materials are generally employed in equimolar amounts. However, it may also be advantageous to employ an excess of one or the other component.

- 20 Suitable solvents are, for example, chlorinated hydrocarbons, such as methylene chloride or 1,2-dichloroethane, aromatic hydrocarbons, for example, toluene, xylene or chlorobenzene, ethers, such as diethyl ether, methyltert-butyl ether, tetrahydrofuran or dioxane, polar aprotic solvents, such as acetonitrile or dimethylformamide, or esters, such as ethyl acetate, or mixtures of these.

- 25 The reaction temperature is generally in the range from 0°C to the boiling point of the reaction mixture.

- 30 Work-up can be carried out in a manner known per se to afford the product.

- 35 E. Preparation of compounds of the formula I where $R^9 = IIa$ (where $R^{10} \neq$ hydroxyl or mercapto) by reacting a metalated pyrazole derivative of the formula V with a tricyclic benzoic acid derivative of the formula VI α :



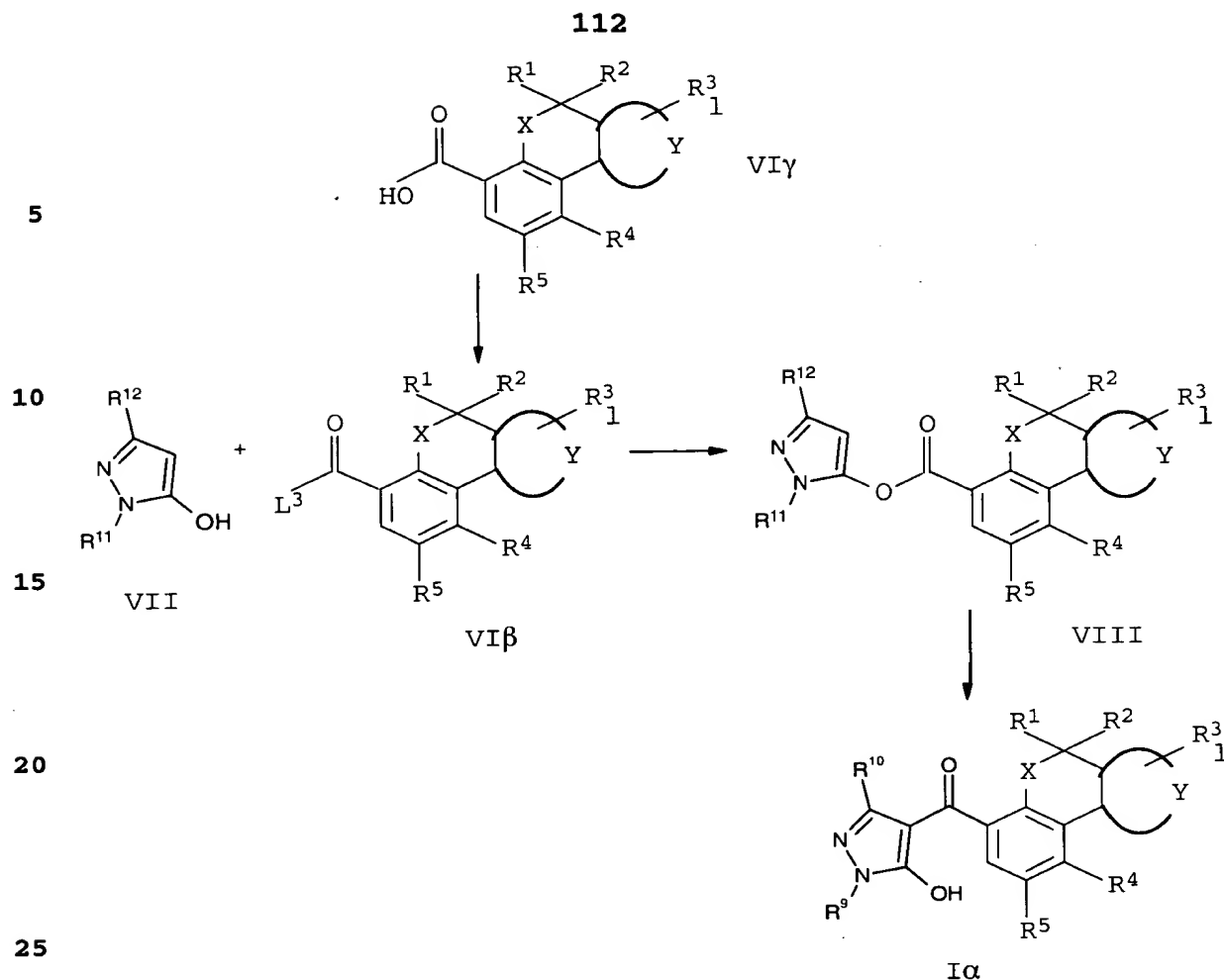
111

Here, M is a metal, in particular an alkali metal, such as lithium or sodium, an alkaline earth metal, such as, for example, magnesium, or a transition metal, such as palladium, nickel, etc. and L^2 is a nucleophilically replaceable leaving group, such as halogen, for example chlorine or bromine, alkylsulfonate, such as mesylate, haloalkylsulfonate, such as triflate, or cyanide.

The reaction is generally carried out at temperatures of from -100°C to the reflux temperature of the reaction mixture. Suitable solvents are inert aprotic solvents, such as ethers, for example diethyl ether, tetrahydrofuran. The compounds of the formula $VI\alpha$ are generally employed in excess, but it may also be advantageous to employ them in equimolar amounts or in substoichiometric amounts. Work-up is carried out to afford the product.

The metalated pyrazole derivatives of the formula V can be formed in a manner known per se by reacting pyrazoles which are halogenated in the 4-position with metals, such as lithium, sodium, magnesium, etc., or with organometallic compounds, such as, for example, butyllithium. However, it is also possible to metalate pyrazoles which are linked in the 4 position to hydrogen directly, for example with the abovementioned metals or organometallic compounds. The reactions are generally carried out in an inert aprotic solvent, preferably in ether, such as diethyl ether, tetrahydrofuran, etc. The reaction temperature is in the range from -100°C to the boiling point of the reaction mixture. The compounds of the formula V are generally directly reacted further or generated in situ.

F. Preparation of compounds of the formula $I\alpha$ ($\equiv I$ where R^{10} = hydroxyl) by reacting an activated tricyclic benzoic acid of the formula $VI\beta$ or a tricyclic benzoic acid $VI\gamma$, preferably activated in situ, with a pyrazole of the formula VII to give the acylation product, followed by rearrangement.



L^3 is a nucleophilically replaceable leaving group, such as halogen, for example bromine or chlorine, hetaryl, for example imidazolyl or pyridyl, carboxylate, for example acetate or trifluoroacetate, etc.

The activated tricyclic benzoic acid VIβ can be employed directly, such as in the case of the tricyclic benzoyl halides, or be generated in situ, for example using dicyclohexylcarbodiimide, triphenylphosphine/azodicarboxylic ester, 2-pyridine disulfide/triphenylphosphine, carbonyldiimidazole, etc.

If appropriate, it may be advantageous to carry out the acylation reaction in the presence of a base. Here, the reactants and the auxiliary base are advantageously employed in equimolar amounts. A slight excess of auxiliary base, for example from 1.2 to 1.5 molar equivalents, based on VI, may be advantageous in certain cases.

113

- Suitable auxiliary bases are tertiary alkylamines, pyridine, or alkali metal carbonates. Suitable solvents are, for example, chlorinated hydrocarbons, such as methylene chloride or 1,2-dichloroethane, aromatic hydrocarbons, such as toluene, xylene or chlorobenzene, ethers, such as diethyl ether, methyl tert-butyl ether, tetrahydrofuran or dioxane, polar aprotic solvents, such as acetonitrile, dimethylformamide or dimethyl sulfoxide, or esters, such as ethyl acetate, or mixtures of these.
- 10 If tricyclic benzoyl halides are employed as activated carboxylic acid components, it may be advantageous to cool the reaction mixture to 0-10°C when adding this reaction partner. The mixture is subsequently stirred at 20 - 100°C, preferably at 25 - 50°C, until the reaction has gone to completion. Work-up is carried out in a customary manner, for example by pouring the reaction mixture into water and extracting the product of value. Solvents which are suitable for this purpose are, in particular, methylene chloride, diethyl ether and ethyl acetate. The organic phase is dried and the solvent removed, and the crude ester can then be employed for the rearrangement without further purification.

- The rearrangement of the esters VIII to give the compounds of the formula Ia is advantageously carried out at from 20 to 100°C in a solvent and in the presence of a base and, if appropriate, using a cyano compound as catalyst.

- Solvents which may be used are, for example, acetonitrile, methylene chloride, 1,2-dichloroethane, dioxane, ethyl acetate, toluene or mixtures of these. Preferred solvents are acetonitrile and dioxane.

- Suitable bases are tertiary amines, such as triethylamine, aromatic amines, such as pyridine, or alkali metal carbonates, such as sodium carbonate or potassium carbonate, which are preferably employed in equimolar amounts or in an up to four-fold excess, based on the ester. Preference is given to using triethylamine or alkali metal carbonate, preferably in double the equimolar ratio, based on the ester.

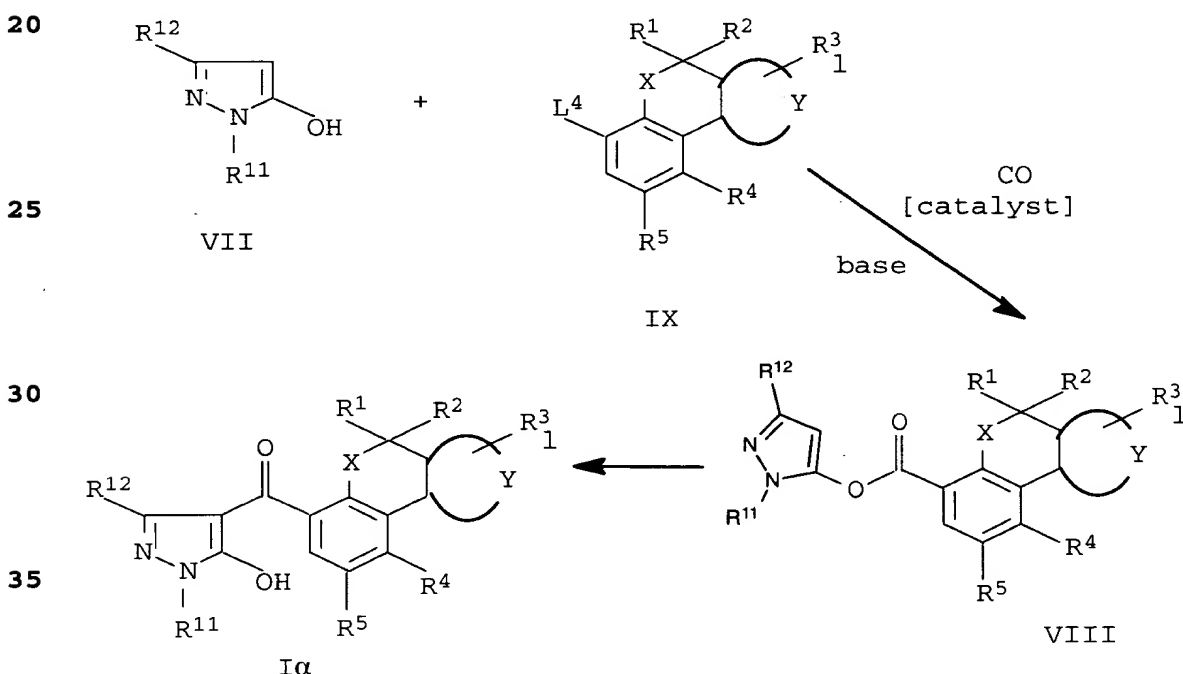
- 40 Suitable cyano compounds are inorganic cyanides, such as sodium cyanide or potassium cyanide, and organic cyano compounds, such as acetone cyanohydrin or trimethylsilyl cyanide. They are employed in an amount of from 1 to 50 mol percent, based on the ester. Preference is given to using acetone cyanohydrin or

114

trimethylsilyl cyanide, for example in an amount of from 5 to 15, preferably 10, mol percent, based on the ester.

Work-up may be carried out in a manner known per se. The reaction mixture is, for example, acidified using dilute mineral acid, such as 5% strength hydrochloric acid or sulfuric acid, and extracted with an organic solvent, for example methylene chloride or ethyl acetate. The organic extract can be extracted with 5-10% strength alkali metal carbonate solution, for example sodium carbonate or potassium carbonate solution. The aqueous phase is acidified and the resulting precipitate is filtered off with suction and/or extracted with methylene chloride or ethyl acetate, the extract being dried and concentrated.

However, it is also possible to generate the ester VIII in situ by reacting a pyrazole of the formula VII, or an alkali metal salt thereof, with a tricyclic benzene derivative of the formula IX in the presence of carbon monoxide, a catalyst and a base.



L⁴ is a leaving group, such as halogen, for example chlorine, bromine or iodine, or sulfonate such as mesylate or triflate; preference is given to bromine or triflate.

If appropriate, the ester VIII reacts directly to give the tricyclic benzoylpyrazole derivative of the formula Ia.

115

Suitable catalysts are palladium ligand complexes in which the palladium is present in oxidation state 0, metallic palladium, if appropriate applied to a support, and preferably palladium(II) salts. The reaction with palladium(II) salts and metallic
 5 palladium is preferably carried out in the presence of complex ligands.

A suitable palladium(0) ligand complex is, for example, tetrakis(triphenylphosphane)palladium.

10

Metallic palladium is preferably applied to an inert carrier, such as, for example, activated carbon, silica, alumina, barium sulfate or calcium carbonate. The reaction is preferably carried out in the presence of complex ligands, such as, for example,

15 triphenylphosphane.

Suitable palladium(II) salts are, for example, palladium acetate and palladium chloride. Preference is given to carrying out the reaction in the presence of complex ligands such as, for example,

20 triphenylphosphane.

Suitable complex ligands for the palladium ligand complexes, or complex ligands in whose presence the reaction with metallic palladium or palladium(II) salts is preferably carried out are
 25 tertiary phosphanes whose structure is represented by the following formulae:



where n is a number from 1 to 4 and the radicals R^a to R^g are C_1 - C_6 -alkyl, aryl- C_1 - C_2 -alkyl or preferably aryl. Aryl is, for
 35 example, naphthyl and unsubstituted or substituted phenyl such as, for example, 2-tolyl and in particular unsubstituted phenyl.

The complex palladium salts can be prepared in a manner known per se starting from commercially available palladium salts, such as
 40 palladium chloride or palladium acetate, and the corresponding phosphanes, such as, for example, triphenylphosphane or 1,2-bis(diphenylphosphano)ethane. A large number of complexed palladium salts is also commercially available. Preferred palladium salts are

45 [(R)-(+)-2,2'-bis(diphenylphosphano)-1,1'-binaphthyl]palladium (II) chloride, bis(triphenylphosphane)palladium(II) acetate and in particular bis(triphenylphosphane)palladium(II) chloride.

116

The palladium catalyst is generally employed in a concentration of from 0.05 to 5 mol%, and preferably of 1-3 mol%.

Suitable bases are tertiary amines, such as, for example,

- 5 N-methylpiperidine, ethyldiisopropylamine, 1,8-bisdimethylaminonaphthalene and in particular triethylamine. Also suitable are alkali metal carbonates, such as sodium carbonate or potassium carbonate. However, mixtures of potassium carbonate and triethylamine are also suitable.

10

In general, from 2 to 4 molar equivalents, in particular 2 molar equivalents, of the alkali metal carbonate, and from 1 to 4 molar equivalents, in particular 2 molar equivalents, of the tertiary amine are employed, based on the tricyclic benzene derivative of

15 the formula IX.

Suitable solvents are nitriles, such as benzonitrile and acetonitrile, amides, such as dimethylformamide, dimethylacetamide, tetra-C₁-C₄-alkylureas or N-methylpyrrolidone,

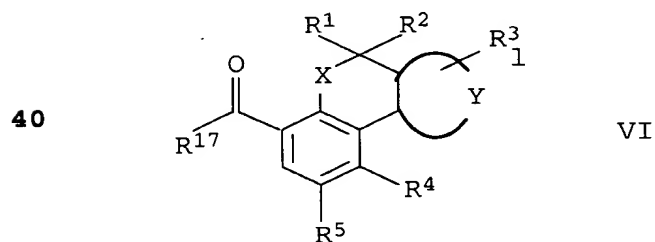
- 20 and preferably ethers, such as tetrahydrofuran, methyl tert-butyl ether. Particular preference is given to using, as solvents, ethers such as 1,4-dioxane and dimethoxyethane.

The tricyclic benzoyl halides of the formula VI β where L³ = Cl, Br
25 can be prepared in a manner known per se by reacting the tricyclic benzoic acids of the formula VI γ (\equiv VIb) with halogenating agents such as thionyl chloride, thionyl bromide, phosgene, diphosgene, triphosgene, oxalyl chloride and oxalyl bromide.

30

In a known manner, the tricyclic benzoic acids of the formula VI γ (\equiv VIb) can be prepared by acidic or basic hydrolysis from the corresponding esters VIc.

- 35 Tricyclic benzoic acid derivatives of the formula VI



45 where:

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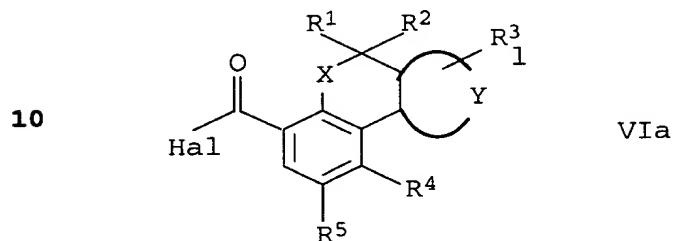
- X is oxygen, sulfur, $S=O$, $S(=O)_2$, CR^6R^7 , NR^8 or a bond;
- Y together with the two carbons to which it is attached forms a saturated, partially saturated or unsaturated 5- or 6-membered heterocycle which contains one to three identical or different heteroatoms selected from the following group: oxygen, sulfur or nitrogen;
- R^1, R^2, R^6, R^7 are hydrogen, C_1 - C_6 -alkyl, C_1 - C_6 -haloalkyl, C_1 - C_6 -alkoxy or C_1 - C_6 -haloalkoxy;
- R^3 is halogen, C_1 - C_6 -alkyl, C_1 - C_6 -haloalkyl, C_1 - C_6 -alkoxy or C_1 - C_6 -haloalkoxy;
- R^4 is nitro, halogen, cyano, C_1 - C_6 -alkyl, C_1 - C_6 -haloalkyl, C_1 - C_6 -alkoxy, C_1 - C_6 -haloalkoxy, C_1 - C_6 -alkylthio, C_1 - C_6 -haloalkylthio, C_1 - C_6 -alkylsulfinyl, C_1 - C_6 -haloalkylsulfinyl, C_1 - C_6 -alkylsulfonyl, C_1 - C_6 -haloalkylsulfonyl, aminosulfonyl, N -(C_1 - C_6 -alkyl)-aminosulfonyl, N,N -di(C_1 - C_6 -alkyl)aminosulfonyl, N -(C_1 - C_6 -alkylsulfonyl)amino, N -(C_1 - C_6 -haloalkylsulfonyl)amino, N -(C_1 - C_6 -alkyl)- N -(C_1 - C_6 -alkylsulfonyl)amino or N -(C_1 - C_6 -alkyl)- N -(C_1 - C_6 -haloalkylsulfonyl)amino;
- R^5 is hydrogen, C_1 - C_6 -alkyl or halogen;
- R^8 is hydrogen, C_1 - C_6 -alkyl, C_1 - C_6 -haloalkyl, C_1 - C_6 -alkylcarbonyl, formyl, C_1 - C_6 -alkoxycarbonyl, C_1 - C_6 -haloalkoxycarbonyl, C_1 - C_6 -alkylsulfonyl or C_1 - C_6 -haloalkylsulfonyl;
- l is 0, 1 or 2;
- R^{17} is hydroxyl or a radical which can be removed by hydrolysis;
- are novel.

Examples of radicals which can be removed by hydrolysis are alkoxy, phenoxy, alkylthio and phenylthio radicals which can be unsubstituted or substituted, halides, heteroaryl radicals which

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are attached via nitrogen, amino and imino radicals which may be unsubstituted or substituted, etc.

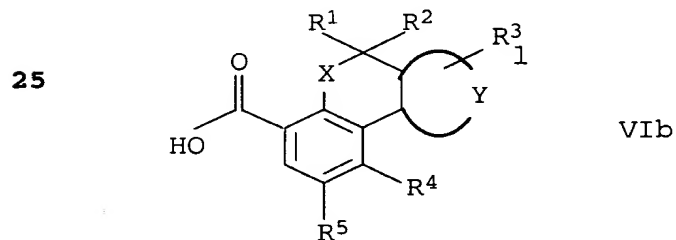
Preference is given to tricyclic benzoyl halides VIa (VI where R^{17} = halogen)



15 where the variables X, Y, R^1 to R^5 and l are as defined under formula VI and

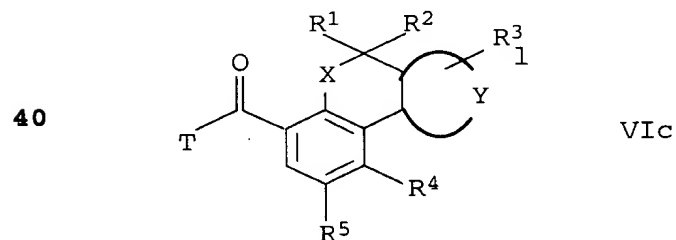
Hal is halogen, in particular chloride or bromide.

20 Preference is also given to tricyclic benzoic acids of the formula VIb (VI where R^{17} = hydroxyl; \equiv VIy),



30 where the variables X, Y, R^1 to R^5 and l are as defined under formula VI.

Preference is also given to tricyclic benzoic esters of the formula VIc (VI where R^{17} = T = C_1 - C_6 -alkoxy),

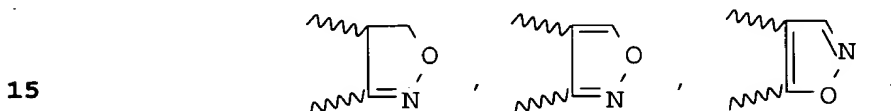


45 where the variables X, Y, R^1 to R^5 and l are as defined under formula VI and

T is C₁-C₆-alkoxy.

With respect to the variables X, Y, R¹ to R⁵ and l, the particularly preferred embodiments of the tricyclic benzoic acid derivatives of the formulae VI, VIa, VIb and VIc correspond to those of the tricyclic benzoylpyrazole derivatives of the formula I.

Particular preference is given to the compounds VI, VIa, VIb and VIc where Y together with the two carbons to which it is attached forms the following heterocycles:



Here, extraordinary preference is given to the compounds VI, VIa, VIb and VIc where

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R⁴ is nitro, halogen, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₁-C₆-alkoxy, C₁-C₆-alkylthio or C₁-C₆-alkylsulfonyl; in particular C₁-C₆-alkylsulfonyl.

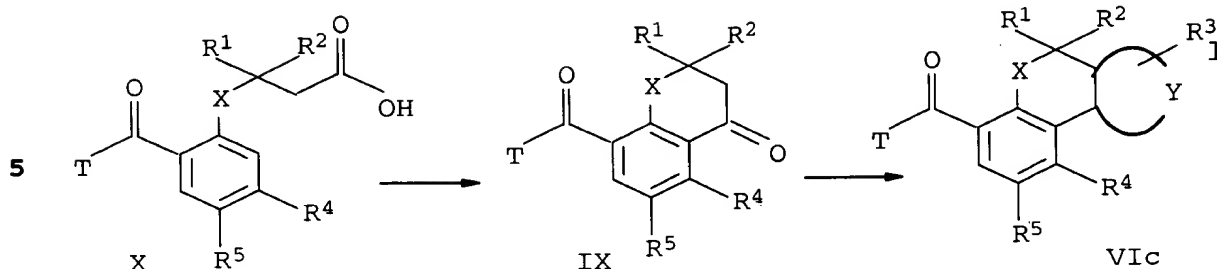
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The tricyclic benzoic esters VIc can be obtained in different ways.

For example, benzoic esters of the formula X, which are prepared in a manner known per se (cf., for example, Chem. Pharm. Bull. 1985, 33 (8), 3336; Helv. Chim. Acta 1987, 70, 1326; J. Chem. Soc. Perkin Trans. 1972, 2019; J. Chem. Soc. Perkin Trans. 1991, 2763; Tetrahedron Asymmetry 1998, 9, 1137), can be cyclized to cyclic ketones of the formula XI (cf., for example, Chem. Ber. 1923, 56, 1819; J. Chem. Soc. Perkin I 1991, 2763; J. Med. Chem. 1988, 31, 230; Tetrahedron 1987, 43, 4549; Synlett 1991, 6, 443; Chem. Pharm. Bull. 1985, 33 (8), 3336). Analogously to known processes (cf., for example, J. Heterocyclic Chem. 1976, 13, 545; J. Heterocyclic Chem. 1972, 9, 1341; J. Org. Chem. 1978, 43, 3015; J. Chem. Soc. Perkin Trans. I 1978, 86; J. Org. Chem. 1986, 51, 2021), these can be converted into the tricyclic benzoic esters of the formula VIc.

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- 10 Furthermore, it may be suitable to cyclize the cyclic ketone of the formula XI in a manner known per se (XII), for example using an anhydride or acid anhydride, if appropriate in the presence of catalytic amounts of a Lewis acid, such as boron trifluoride (cf., for example, Can. J. Chem. 1979, 57, 3292; J. Am. Chem. Soc. 1953, 75, 626), followed by reaction with a hydrazine (cf. A.R. Katritzky et al., Comprehensive Heterocyclic Chemistry, Vol. 5, p. 121, 277 - 280 (1984), Pergamon Press; J. Org. Chem. 1961, 26, 451; Org. Synth. 1949, 29, 54), where the resulting pyrazole radical can be modified further by customary processes.
- 20 Furthermore, the diketone XII can be reacted with hydroxylamine or equivalents thereof (cf. A.R. Katritzky et al., Comprehensive Heterocyclic Chemistry, Vol. 6, p. 61 - 64, 118 (1984), Pergamon Press; Chem. Ber. 1967, 100, 3326). This gives the corresponding
- 25 isoxazole derivatives which can be modified further by customary processes.

It is also possible to react the diketone XII with amidines (cf., for example, A.R. Katritzky et al., Comprehensive Heterocyclic

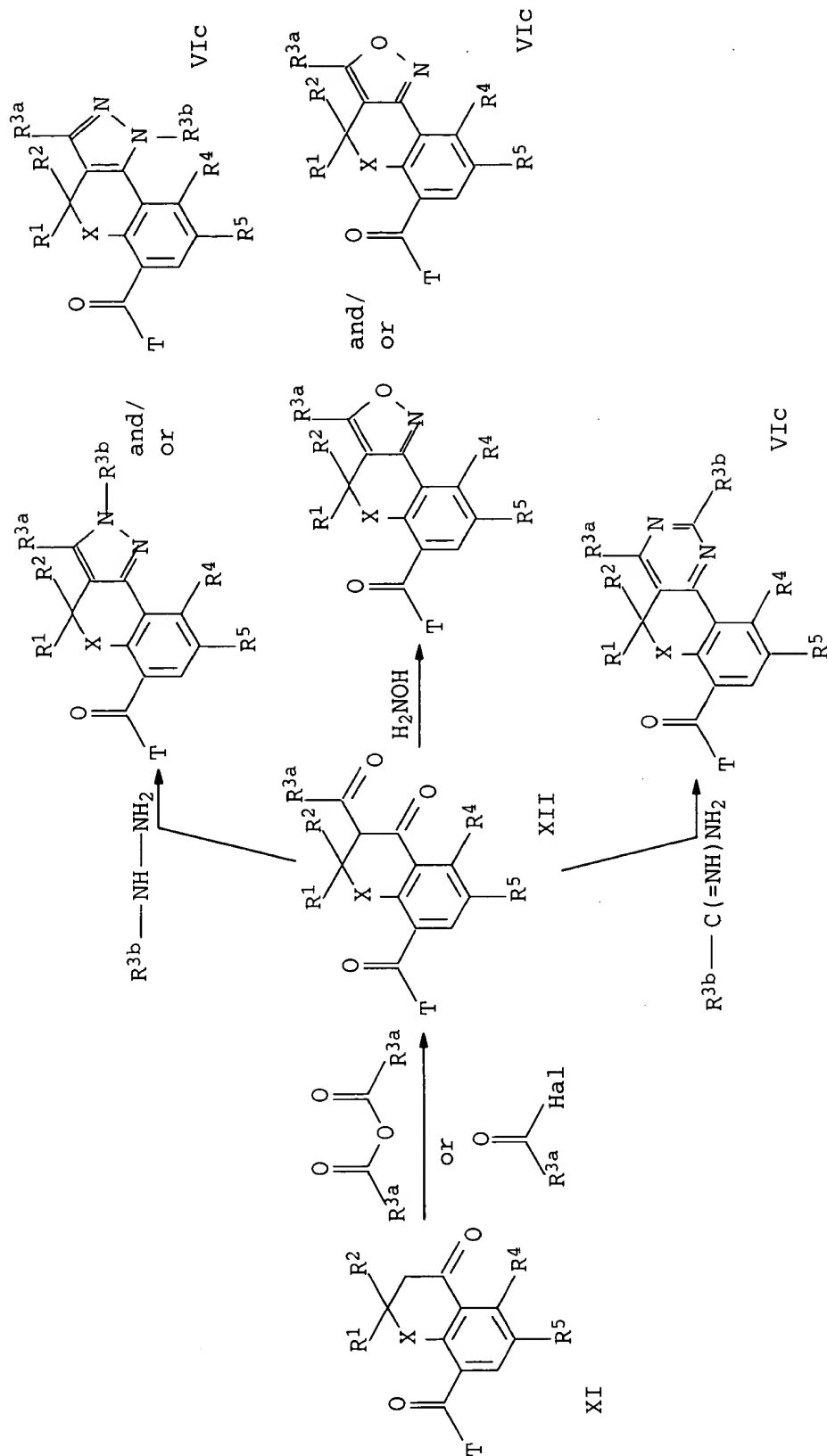
30 Chemistry, Vol. 3, p. 112 - 114 (1924), Pergamon Press; J. Chem. Soc. C 1967, 1922; Org. Synth. 1963, IV, 182). If required, the resulting pyrimidine derivatives can be modified further by customary processes.

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In the reactions mentioned above, it is also possible to employ, instead of the diketone XII, equivalents thereof, such as enol ethers or enamines, which can be prepared analogously to known processes.

- It may also be possible to react the cyclic ketone of the formula XI analogously to known processes with an aldehyde or ketone to give (XIII) (cf., for example, Tetrahedron Lett. 1978, 2111; Tetrahedron Lett. 1981, 5251; Chem. Ber. 1960, 2294; J. Chem. Soc. Perkin Trans. 1, 1991, 1467; Tetrahedron Lett. 1992, 8091). The resulting unsaturated cyclic ketone of the formula XIII can be reacted with a hydrazine in a manner known per se (cf., for example, A.R. Katritzky et al. Comprehensive Heterocyclic Chemistry, Vol. 2, 6 (1984), Pergamon Press; J. Heterocyclic Chem. 1969, 533; J. Heterocyclic Chem. 1968, 853), where the resulting pyrazoline can be modified further by customary processes.
- It is furthermore possible to react the unsaturated cyclic ketone of the formula XIII with hydroxylamine or equivalents thereof (Z. Chem. 1980, 20, 19). This gives the corresponding isoxazoline derivatives, which can be modified further by customary processes.

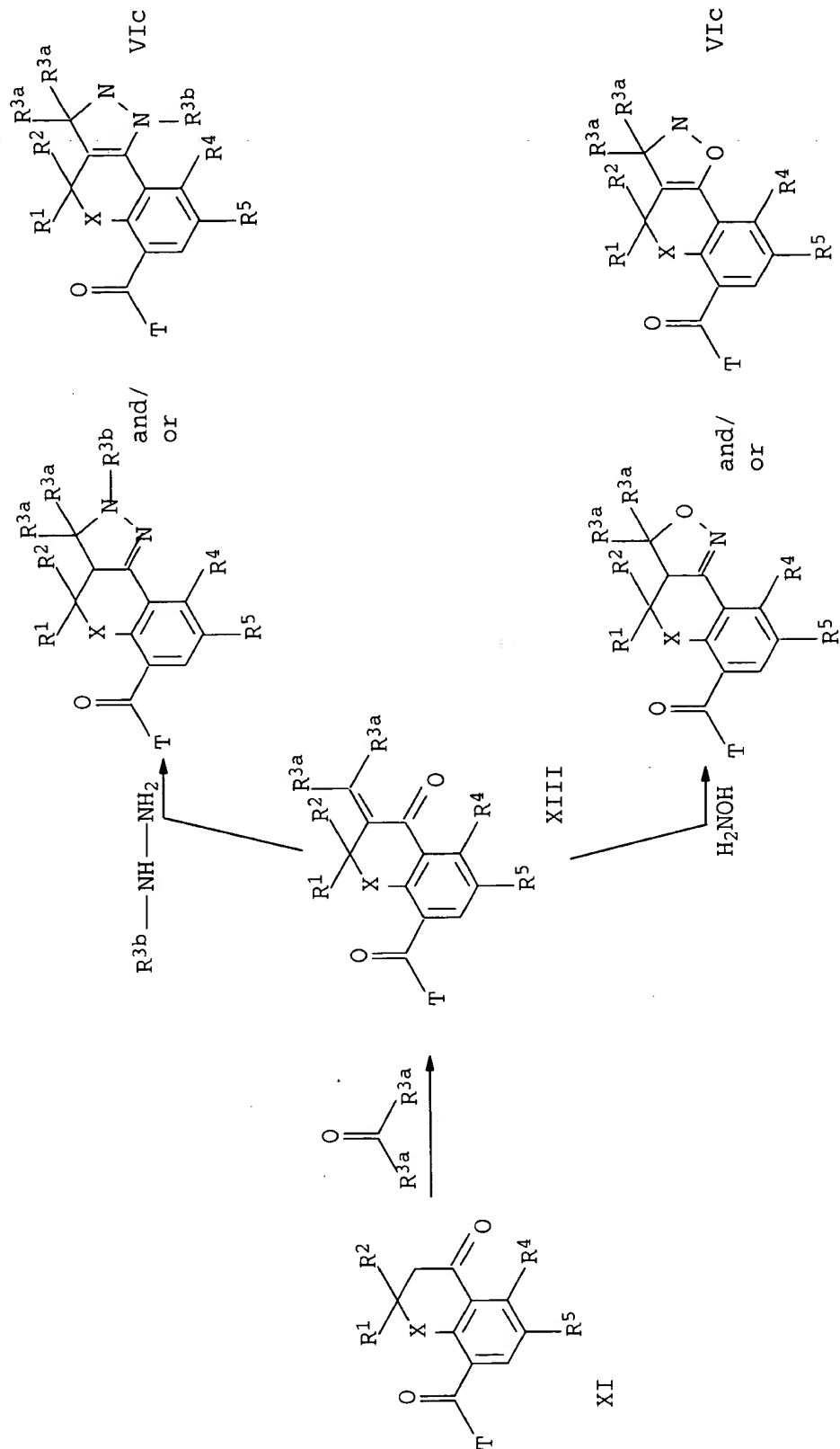
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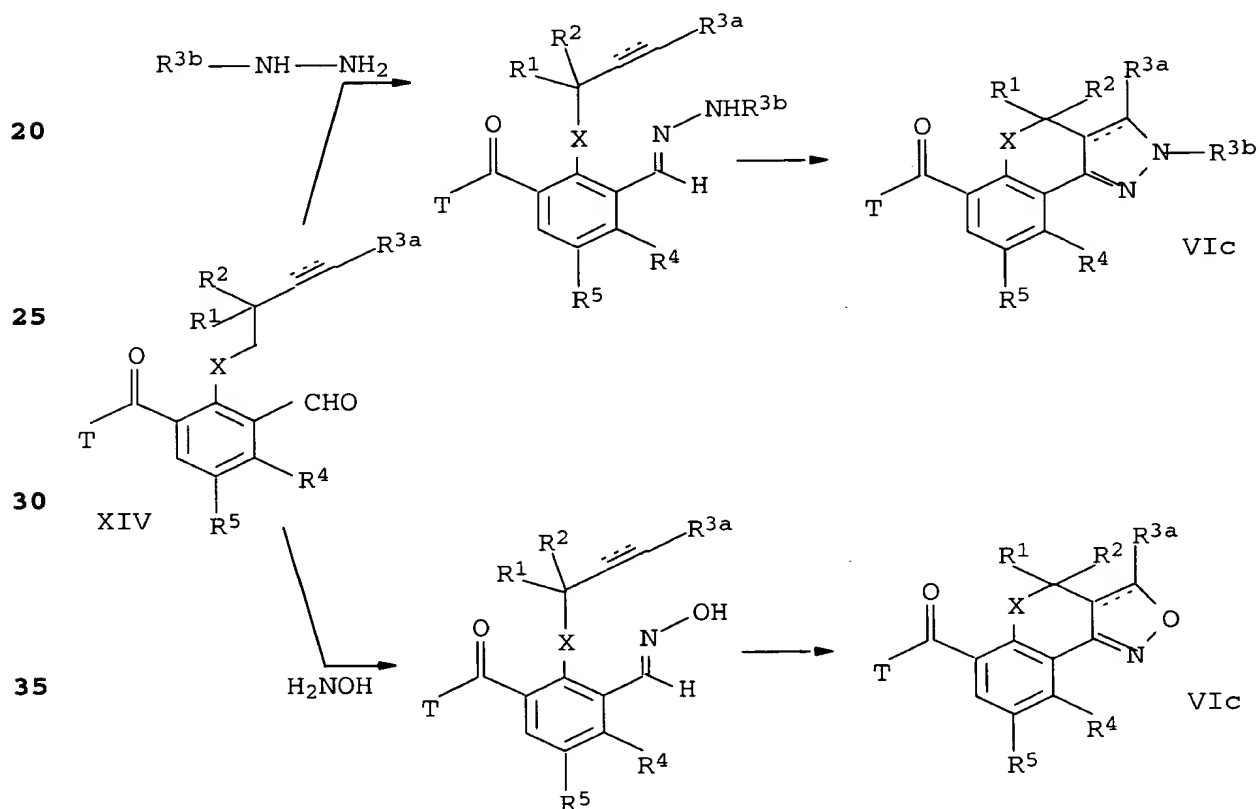
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Furthermore, it is possible to convert aldehydes of the formula XIV, which can be prepared in a manner known per se, analogously to processes known from the literature by reaction with a
 5 hydrazine or hydroxylamine (or equivalents of these) into the corresponding hydrazones or oximes (cf., for example, Synth. Commun. 1990, 20, 1373; J. Org. Chem. 1980, 45, 3756). These in turn can be converted in a manner known per se into the corresponding 1,3-dipoles, which then react in a
 10 [3 + 2]-cycloaddition to give the compounds VIc (cf., for example, Synth. Commun. 1990, 20, 1373; EP-A 386 892; J. Org. Chem. 1980, 45, 3756; Tetrahedron Lett. 1981, 22, 1333.)

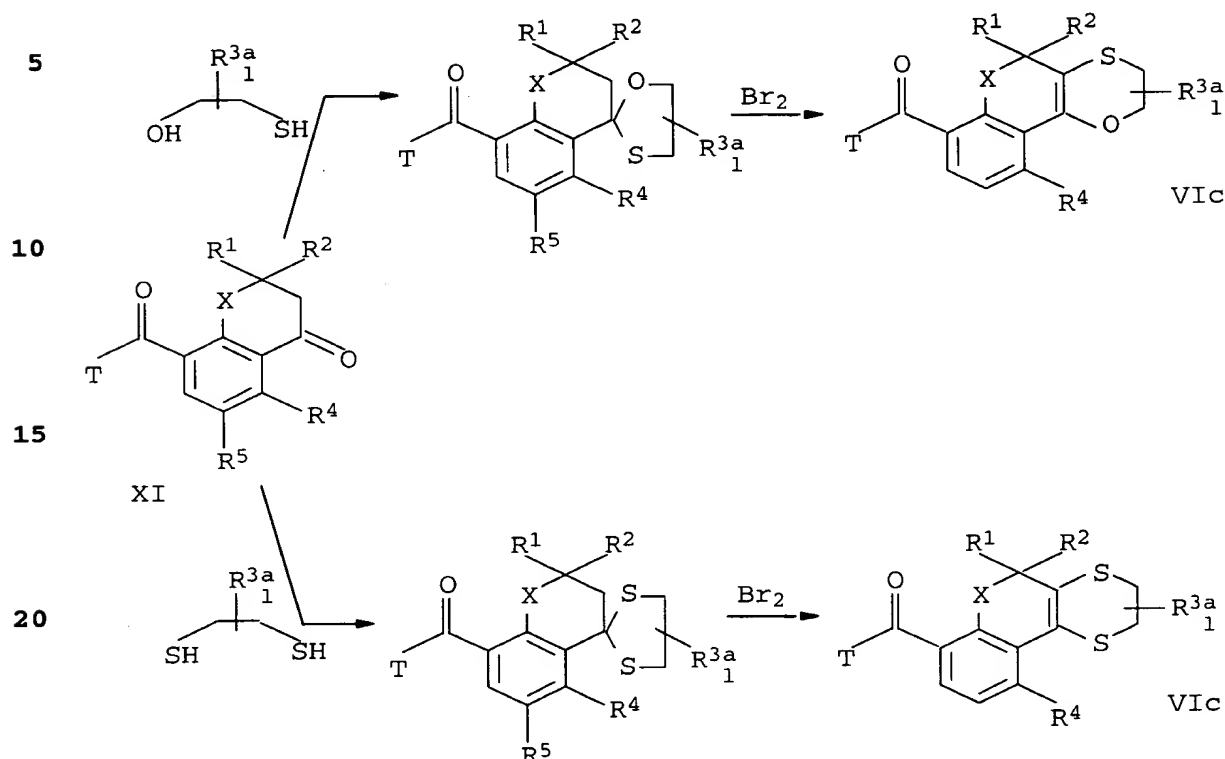
The resulting pyrazoles or pyrazolines and isoxazoles or
 15 isoxazolines can be modified further by customary processes.



40 It is also possible to react the cyclic ketone of the formula XI with a dithiol or a "mixed alcohol" analogously to processes known from the literature (cf., for example, T.W. Greene et al., Protective Groups in Organic Synthesis, John Wiley & Sons, 133-140), and to subject it subsequently to a rearrangement in
 45 the presence of bromine or a suitable Lewis acid, such as, for

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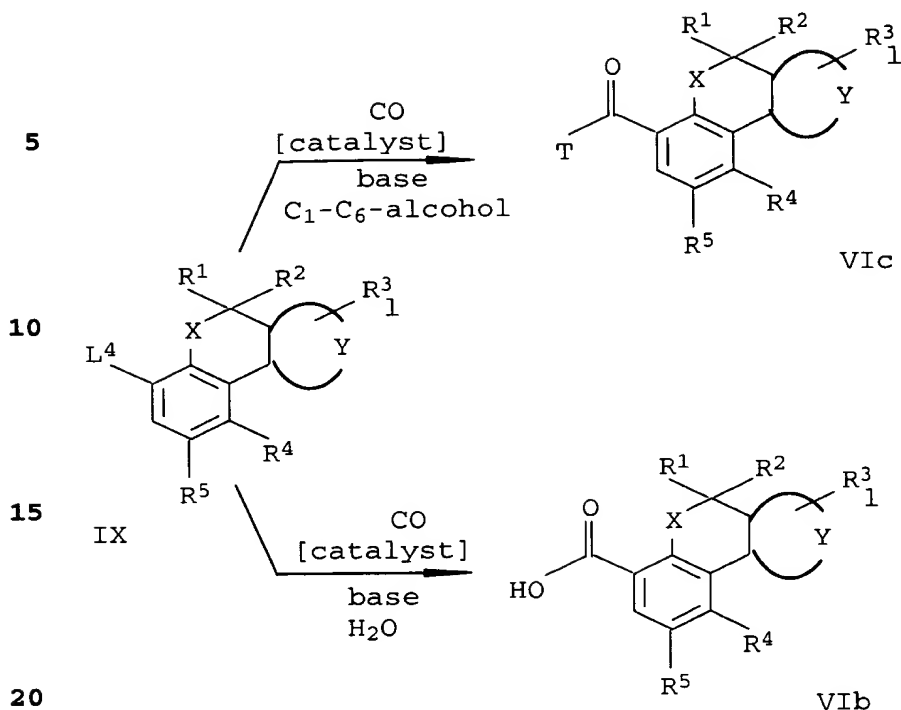
example, tellurium tetrachloride (cf. Tetrahedron 1991, 47, 4187; Synthesis 1991, 223; J. Chem. Soc. Chem. Commun. 1985, 1645).



The resulting heterocycles can, if desired, be modified further by processes known per se.

The abovementioned substituents R^{3a} are hydrogen, C₁-C₆-alkyl, C₁-C₆-haloalkyl, hydroxyl, C₁-C₆-alkoxy or C₁-C₆-haloalkoxy; furthermore, the abovementioned radicals R^{3b} are hydrogen, C₁-C₆-alkyl or C₁-C₆-haloalkyl.

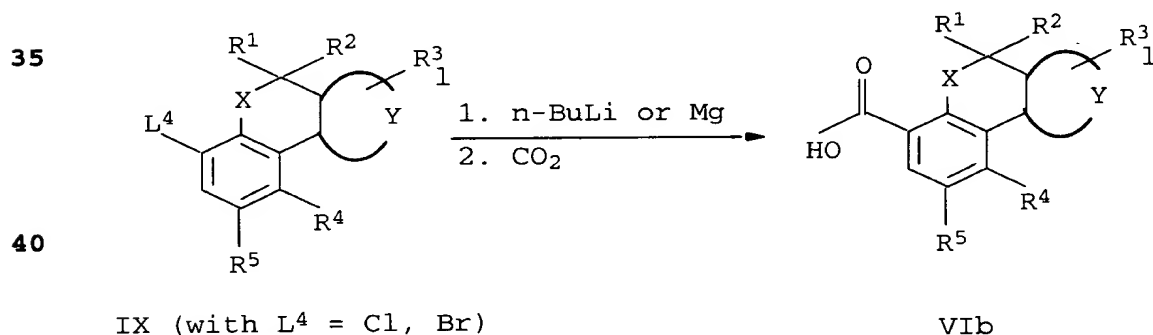
The tricyclic benzoic esters of the formula VIc or the tricyclic benzoic acids of the formula VId can be obtained by reacting a tricyclic benzene derivative of the formula IX with a C₁-C₆-alcohol or water in the presence of carbon monoxide, a catalyst and a base. In general, the conditions mentioned under process F apply.



L^4 is a leaving group, such as halogen, for example chlorine, bromine or iodine, or sulfate, such as mesylate or triflate; preference is given to bromine or triflate.

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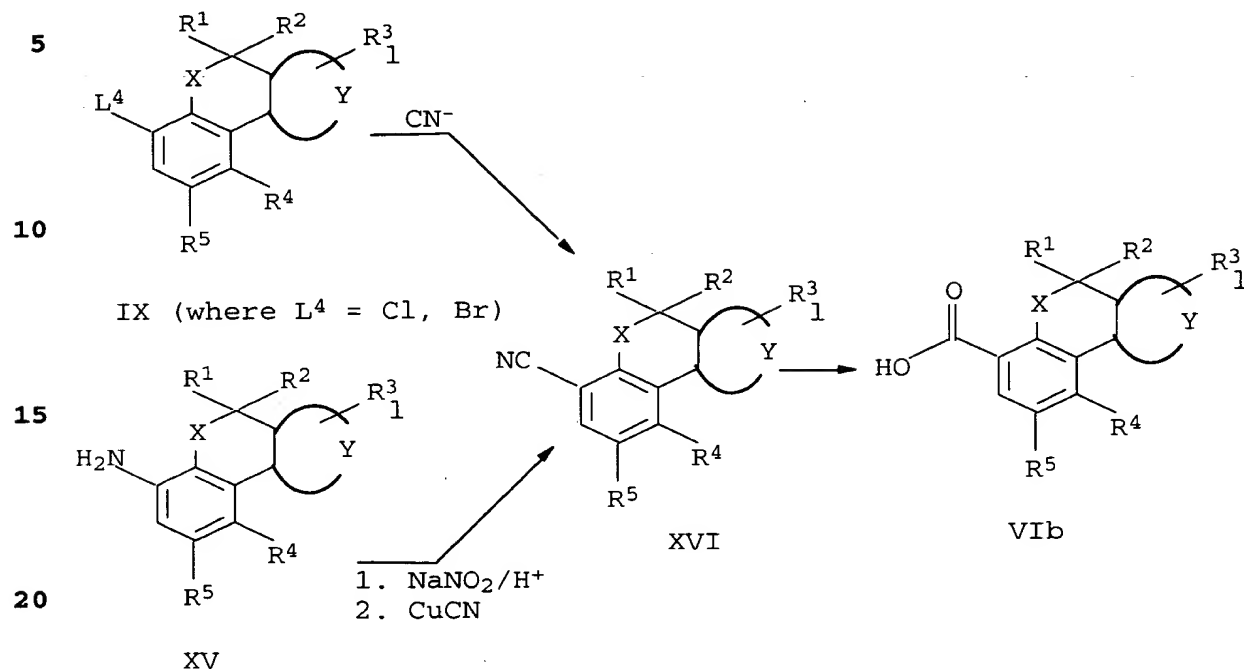
Furthermore, the tricyclic benzoic acids of the formula VIb can be obtained by converting a tricyclic benzene derivative of the formula IX where L^4 is halogen, such as chlorine or bromine, in particular bromine, by reaction with, for example, *n*-butyllithium or magnesium into the metalated derivative, followed by quenching with carbon dioxide (cf., for example, J. Org. Chem. 1990, 55, 773; Angew. Chem. Int. Ed. 1969, 8, 68).



45 It is also possible to obtain the tricyclic benzoic acids VIb by hydrolyzing the corresponding nitriles, analogously to processes known from the literature. The nitriles for their part can be

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obtained by halogen/nitrile exchange or by Sandmeyer reaction from the corresponding anilines XV.



The compounds of the formula IX,

where:

X is oxygen, sulfur, $\text{S}=\text{O}$, $\text{S}(\text{=O})_2$, CR^6R^7 , NR^8 or a bond;

Y together with the two carbons to which it is attached forms a saturated, partially saturated or unsaturated 5- or 6-membered heterocycle which contains one to three identical or different heteroatoms selected from the following group: oxygen, sulfur or nitrogen;

$\text{R}^1, \text{R}^2, \text{R}^6, \text{R}^7$ are hydrogen, $\text{C}_1\text{-C}_6\text{-alkyl}$, $\text{C}_1\text{-C}_6\text{-haloalkyl}$, $\text{C}_1\text{-C}_6\text{-alkoxy}$ or $\text{C}_1\text{-C}_6\text{-haloalkoxy}$;

R^3 is halogen, $\text{C}_1\text{-C}_6\text{-alkyl}$, $\text{C}_1\text{-C}_6\text{-haloalkyl}$, $\text{C}_1\text{-C}_6\text{-alkoxy}$ or $\text{C}_1\text{-C}_6\text{-haloalkoxy}$;

R^4 is nitro, halogen, cyano, $\text{C}_1\text{-C}_6\text{-alkyl}$, $\text{C}_1\text{-C}_6\text{-haloalkyl}$, $\text{C}_1\text{-C}_6\text{-alkoxy}$, $\text{C}_1\text{-C}_6\text{-haloalkoxy}$, $\text{C}_1\text{-C}_6\text{-alkylthio}$, $\text{C}_1\text{-C}_6\text{-haloalkylthio}$, $\text{C}_1\text{-C}_6\text{-alkylsulfinyl}$, $\text{C}_1\text{-C}_6\text{-haloalkylsulfinyl}$,

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C₁-C₆-alkylsulfonyl, C₁-C₆-haloalkylsulfonyl, aminosulfonyl, N-(C₁-C₆-alkyl)aminosulfonyl, N,N-di(C₁-C₆-alkyl)aminosulfonyl, N-(C₁-C₆-alkylsulfonyl)amino, N-(C₁-C₆-haloalkylsulfonyl)amino, N-(C₁-C₆-alkyl)-N-(C₁-C₆-alkylsulfonyl)amino or N-(C₁-C₆-alkyl)-N-(C₁-C₆-haloalkylsulfonyl)amino;

R⁵ is hydrogen, C₁-C₆-alkyl or halogen;

R⁸ is hydrogen, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₁-C₆-alkylcarbonyl, formyl, C₁-C₆-alkoxycarbonyl, C₁-C₆-haloalkoxycarbonyl, C₁-C₆-alkylsulfonyl or C₁-C₆-haloalkylsulfonyl;

l is 0, 1 or 2;

L⁴ is halogen, C₁-C₆-alkylsulfonyloxy, C₁-C₆-haloalkylsulfonyloxy or phenylsulfonyloxy, where the phenyl ring of the lastmentioned radical may be unsubstituted or partially or fully halogenated and/or may carry one to three of the following radicals: nitro, cyano, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₁-C₄-alkoxy or C₁-C₄-haloalkoxy;

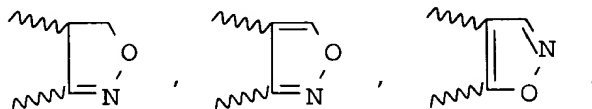
are novel.

Preference is given to compounds of the formula IX where L⁴ is halogen, in particular bromine.

The particularly preferred embodiments of the compounds of the formula IX with respect to the variables X, Y, R¹ to R⁵ and l correspond to those of the tricyclic benzoylpyrazole derivatives of the formula I.

Particular preference is given to the compounds of the formula IX where

Y together with the two carbons to which it is attached forms the following heterocycles:



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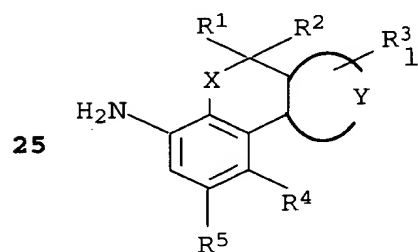
Here, extraordinary preference is given to the compounds IX where

- 5 R^4 is nitro, halogen, C_1 - C_6 -alkyl, C_1 - C_6 -haloalkyl, C_1 - C_6 -alkoxy, C_1 - C_6 -alkylthio or C_1 - C_6 -alkylsulfonyl; in particular C_1 - C_6 -alkylsulfonyl.

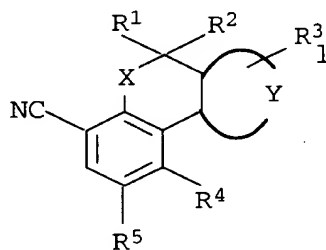
- 10 The compounds of the formula IX can be obtained in different ways, the fused system, for example, can be constructed analogously to the processes described for the compounds of the formula VIc.

- 15 However, it is also possible to construct the fused system from a suitable parent compound (analogously to the processes described for compounds of the formula VIc) and to introduce L^4 = halogen subsequently by customary halogenating reactions.

- 20 The anilines of the formula XV and the nitriles of the formula XVI



XV



XVI

where:

- 35 X is oxygen, sulfur, $S=O$, $S(=O)_2$, CR^6R^7 , NR^8 or a bond;
- 40 Y together with the two carbons to which it is attached forms a saturated, partially saturated or unsaturated 5- or 6-membered heterocycle which contains one to three identical or different heteroatoms selected from the following group: oxygen, sulfur or nitrogen;
- 45 R^1, R^2, R^6, R^7 are hydrogen, C_1 - C_6 -alkyl, C_1 - C_6 -haloalkyl, C_1 - C_6 -alkoxy or C_1 - C_6 -haloalkoxy;

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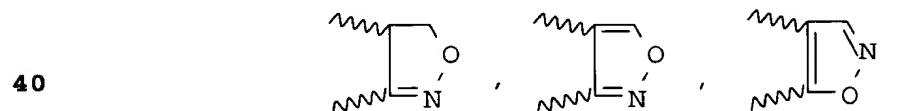
- R³ is halogen, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₁-C₆-alkoxy or C₁-C₆-haloalkoxy;
- 5 R⁴ is nitro, halogen, cyano, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₁-C₆-alkoxy, C₁-C₆-haloalkoxy, C₁-C₆-alkylthio, C₁-C₆-haloalkylthio, C₁-C₆-alkylsulfinyl, C₁-C₆-haloalkylsulfinyl, C₁-C₆-alkylsulfonyl, C₁-C₆-haloalkylsulfonyl, aminosulfonyl, N-(C₁-C₆-alkyl)aminosulfonyl, 10 N,N-di(C₁-C₆-alkyl)aminosulfonyl, N-(C₁-C₆-alkylsulfonyl)amino, N-(C₁-C₆-haloalkylsulfonyl)amino, N-(C₁-C₆-alkyl)-N-(C₁-C₆-alkylsulfonyl)amino or N-(C₁-C₆-alkyl)-N-(C₁-C₆-haloalkylsulfonyl)amino; 15
- R⁵ is hydrogen, C₁-C₆-alkyl or halogen;
- R⁸ is hydrogen, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₁-C₆-alkylcarbonyl, formyl, C₁-C₆-alkoxycarbonyl, 20 C₁-C₆-haloalkoxycarbonyl, C₁-C₆-alkylsulfonyl or C₁-C₆-haloalkylsulfonyl;
- 1 is 0, 1 or 2;

25 are also novel.

The particularly preferred embodiments of the compounds of the formulae XV and XVI with respect to the variables X, Y, R¹ to R⁵ and 1 correspond to those of the tricyclic benzoylpyrazole 30 derivatives of the formula I.

Particular preference is given to the compounds of the formula XV or XVI where

- 35 Y together with the two carbons to which it is attached forms the following heterocycles:



Here, extraordinary preference is given to the compounds XV or XVI where

- 45 R⁴ is nitro, halogen, C₁-C₆-alkyl, C₁-C₆-haloalkyl, C₁-C₆-alkoxy, C₁-C₆-alkylthio or

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C₁-C₆-alkylsulfonyl; in particular
C₁-C₆-alkylsulfonyl.

The compounds of the formula XV can be obtained in different
5 ways; for example, the fused system can be constructed
analogously to the processes described for the compounds of the
formula VIc.

However, it is also possible to construct the fused system from a
10 suitable parent compound (analogously to the processes described
for the compounds of the formula VIc) and to introduce a nitro
group subsequently by nitration para to R⁴, analogously to
processes known from the literature, and to convert this group in
a manner known per se by reduction into the amino group.

15 If appropriate, it may be advantageous in the synthesis variants
described above to introduce protective groups for certain
functionalities if the functionalities are not compatible with
the reaction conditions required.

20 The selection of the protective groups depends both on the
reaction conditions and on the structure of the molecule. The
protective groups, their introduction and their removal are
generally known from the literature (cf., for example,
25 T.W. Greene et al., "Protective Groups in Organic Synthesis",
2nd edition, Wiley, New York, 1991), and they can be employed
analogously to processes known from the literature.

Furthermore, it may be necessary to carry out a combination of
30 the synthesis variants described above.

It is also possible to introduce further substituents or to
modify the substituents present by electrophilic, nucleophilic,
free-radical or organometallic reactions and by oxidation or
35 reduction reactions.

Preparation Examples:

1. (5-Phenylcarbonyloxy-1-methyl-1H-pyrazol-4-yl)-(8-methyl-
40 sulfonyl-3a,4-dihydro-3H-indeno[1,2-c]isoxazol-5-yl)methanone
(compound 2.2)

2-Allyl-6-chlorobenzaldehyde

45 Under an atmosphere of protective gas, a solution of 10.89 g
(0.107 mol) of trimethylethylenediamine in 50 ml of anhydrous
tetrahydrofuran was cooled to -10°C and admixed dropwise with

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66.6 ml of a 1.6 molar solution of n-butyllithium in hexane (0.107 mol). After 10 minutes, 15 g (0.107 mol) of 6-chlorobenzaldehyde in 70 ml of tetrahydrofuran were added dropwise, and the mixture was admixed with a further 0.214 mol of n-butyllithium in hexane (146.8 ml) and stirred at 0°C for 2.5 hours. The mixture was cooled to -20°C, 12.42 g (0.139 mol) of copper(I) cyanide were added, the mixture was stirred at -10°C for 30 minutes, and 28.42 g of allyl bromide in 100 ml of tetrahydrofuran were then added dropwise. The mixture was stirred at 0°C for another 2.5 hours, and 230 ml of saturated ammonium chloride solution were then added dropwise. The resulting solid was separated off and the aqueous phase was extracted with diethyl ether. The combined organic phases were then washed with saturated ammonium chloride solution and dried, and the solvent was removed under reduced pressure. This gave 17.0 g of 2-allyl-6-chlorobenzaldehyde (89%) in the form of a dark oil. ¹H NMR (CDCl₃, δ in ppm): 3.73 (d, 2H); 5.05 (dd, 2H); 5.96 (m, 1H); 7.05-7.48 (m, 3H); 10.58 (s, 1H).

2-Allyl-6-chlorobenzaldehyde oxime

5.58 g of sodium bicarbonate were added to a solution of 4.62 g of hydroxylamine hydrochloride in 50 ml of water, and the mixture was cooled to 0°C. A solution of 9.7 g (44.32 mmol) of 2-allyl-6-chlorobenzaldehyde in 50 ml of methanol was then added dropwise, and the mixture was stirred at room temperature overnight. The methanol was subsequently removed under reduced pressure and the residue was stirred into 300 ml of water. The aqueous phase was extracted with diethyl ether and the combined organic phases were washed with saturated ammonium chloride solution and dried, and the solvent was removed. This gave 8.7 g (quantitative) of 2-allyl-6-chlorobenzaldehyde oxime in the form of a viscous oil. ¹H NMR (CDCl₃, δ in ppm): 3.58 (d, 2H); 5.02 (2d, 2H); 5.95 (m, 1H); 7.08-7.36 (m, 3H); 8.49 (s, 1H).

8-Chloro-3a,4-dihydro-3H-indeno[1,2-c]isoxazole

At room temperature, 37.0 ml of a sodium hypochlorite solution (12.5% of active chlorine) were added dropwise to a solution of 8.4 g (42.9 mmol) of 2-allyl-6-chlorobenzaldehyde oxime in 100 ml of methylene chloride, and a spatula tip of sodium acetate was added. The mixture was stirred at room temperature for 2 hours, the organic phase was separated off, the aqueous phase was extracted with methylene chloride and

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the combined organic phases were washed with saturated ammonium chloride solution. The organic phase was dried and the solvent was removed. This gave 7.0 g (94%) of 8-chloro-3a,4-dihydro-3H-indeno-[1,2-c]isoxazole in the form of a viscous oil.

¹H NMR (CDCl₃, δ in ppm): 2.81 (dd, 1H); 3.24 (dd, 1H); 3.78-4.03 (s, 2H); 4.78 (t, 1H); 7.23-7.41 (m, 3H).

8-Methylthio-3a,4-dihydro-3H-indeno[1,2c]isoxazole

At room temperature, 3.6 g (52.0 mmol) of sodium thiomethoxide were added to a solution of 5.0 g (25.8 mmol) of 8-chloro-3a,4-dihydro-3H-indeno-[1,2-c]isoxazole in 60 ml of N-methylpyrrolidone, and the mixture was stirred overnight. The mixture was subsequently stirred into 800 ml of water, the aqueous phase was extracted with diethyl ether, the combined organic phases were washed with saturated ammonium chloride solution and dried, and the solvent was removed. This gave 4.6 g (87%) of 8-methylthio-3a,4-dihydro-3H-indeno[1,2-c]isoxazole in the form of a dark brown solid.

¹H NMR (CDCl₃, δ in ppm): 2.54 (s, 3H); 2.78 (dd, 1H); 3.21 (dd, 1H); 3.72-3.93 (s, 2H); 4.64 (t, 1H); 7.09-7.38 (m, 3H).

5-Bromo-8-methylthio-3a,4-dihydro-3H-indeno[1,2-c]isoxazole

120 ml of sulfuric acid (98 percent strength) were cooled to 0°C, and 11.2 g (54.8 mmol) of

8-methylthio-3a,4-dihydro-3H-indeno[1,2-c]isoxazole were added a little at a time. 9.2 g (57.5 mmol) of bromine were then added dropwise, and stirring was continued at 0°C for another 2 hours. The resulting solution was poured into 2 l of a mixture of water and ice, this mixture was stirred for 1.5 hours and the precipitated solid was filtered off with suction and then washed and dried. This gave 11.4 g (73%) of 5-bromo-8-methylthio-3a,4-dihydro-3H-indeno[1,2-c]isoxazole of a brown solid having a m.p. of 127-135°C.

¹H NMR (CDCl₃, δ in ppm): 2.53 (s, 3H); 2.71 (dd, 1H); 3.24 (dd, 1H); 3.81-4.02 (s, 2H); 4.71 (t, 1H); 7.01 (d, 1H); 7.47 (d, 1H).

5-Bromo-8-methylsulfonyl-3a,4-dihydro-3H-indeno[1,2-c]-isoxazole

A solution of 11.2 g (39.4 mmol) of 5-bromo-8-methylthio-3a,4-dihydro-3H-indeno[1,2-c]isoxazole and 1.55 g of sodium tungstate in 250 ml of toluene and 50 ml

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of glacial acetic acid was heated to 70°C and mixed dropwise with 10.73 g (39 percent strength, 86.8 mmol) of hydrogen peroxide. Stirring was continued at 70°C for another 3 hours, and a solid precipitated out. The mixture was allowed to cool to room temperature and stirred into 1 l of water, and the white solid was filtered off with suction. The organic phase of the filtrate was separated off and the aqueous phase was extracted with ethyl acetate. The combined organic phases were washed with water and dried, and the solvent was removed. This gave a viscous brown oil which was stirred with hexane/ethyl acetate (4:1). The resulting precipitate was filtered off with suction and combined with the solid obtained above. This gave 7.3 g (59%) of 5-bromo-8-methylsulfonyl-3a,4-dihydro-3H-indeno[1,2-c]-isoxazole.

¹H-NMR (d⁶-DMSO, δ in ppm): 2.93 (dd, 1H); 3.23 (dd, 1H); 3.41 (s, 3H); 3.94 (dd, 1H); 4.16 (m, 1H); 4.81 (t, 1H); 7.82 (d, 1H); 8.03 (d, 1H).

(5-Hydroxy-1-methyl-1H-pyrazol-4-yl)-(8-methylsulfonyl-3a,4-dihydro-3H-indeno[1,2-c]isoxazol-5-yl)methanone (compound 2.1)

0.62 g (6.33 mmol) of 5-hydroxy-1-methylpyrazole, 1.75 g (12.66 mmol) of dry potassium carbonate, 1.28 g (12.67 mmol) of triethylamine and 0.22 g (0.30 mmol) of bis-(triphenylphosphane)palladium dichloride were added to a suspension of 2.0 g (6.33 mmol) of 5-bromo-8-methylsulfonyl-3a,4-dihydro-3H-indeno[1,2-c]-isoxazole in 100 ml of dioxane. In a miniautoclave, a carbon monoxide pressure of 20 bar was applied, the mixture was stirred for 5 minutes and the autoclave was vented. This procedure was repeated 3 times. The autoclave was subsequently heated to 130°C, a carbon monoxide pressure of 20 bar was applied once more and the mixture was stirred for 24 hours. After cooling and venting, the solvent was removed, and the residue was taken up in water, adjusted to pH 11 and washed with methylene chloride. The mixture was subsequently acidified to pH 4 using 10 percent strength hydrochloric acid and extracted with methylene chloride. The combined organic phases were washed with saturated ammonium chloride solution and dried, and the solvent was removed. This gave 0.58 g (25%) of (5-hydroxy-1-methyl-1H-pyrazol-4-yl)-(8-methylsulfonyl-3a,4-dihydro-3H-indeno[1,2-c]isoxazole)-methanone in the form of a dark oil.

¹H NMR (CDCl₃, δ in ppm): 3.03 (dd, 1H); 3.42 (s, 3H); 3.40

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(m, 1H); 3.51 (s, 3H); 4.05 (m, 2H); 4.85 (t, 1H); 7.57 (s, 1H); 7.92 (d, 1H); 8.22 (d, 1H).

- 5 (5-Phenylcarbonyloxy-1-methyl-1H-pyrazol-4-yl)-(8-methylsulfonyl-3a,4-dihydro-3H-indeno[1,2-c]isoxazol-5-yl)methanone (compound 2.2)

10 Under an atmosphere of protective gas, 0.18 g of triethylamine and 0.26 g (1.82 mmol) of benzoyl chloride in 10 ml of tetrahydrofuran were added at 0°C to a suspension of 0.55 g (1.52 mmol) of (5-hydroxy-1-methyl-1H-pyrazol-4-yl)-(8-methylsulfonyl-3a,4-dihydro-3H-indeno[1,2-c]-isoxazol-5-yl)methanone in 10 ml of tetrahydrofuran. The mixture was stirred overnight at room temperature, the solvent was removed, the residue was taken up in ethyl acetate, washed with water and dried, and the solvent was removed. The crude product was purified by silica gel chromatography (mobile phase: ethyl acetate: hexane = 1:1). This gave 0.22 g (31%) of (5-phenylcarbonyloxy-1-methyl-1H-pyrazol-4-yl)-(8-methylsulfonyl-3a,4-dihydro-3H-indeno[1,2-c]isoxazol-5-yl)methanone in the form of a yellow solid having a m.p. of 86-93°C.

20 ¹H NMR (CDCl₃, δ in ppm): 3.22 (s, 3H); 3.34 (m, 2H); 3.81 (s, 3H); 3.98 (m, 2H); 4.81 (t, 1H); 7.20 - 8.21 (m, 8H).

- 25 2. 4-(2-Methyl-9-chloro-[1]-thiochromano[4,3-c]pyrazol-6-yl)carbonyl-5-hydroxy-1-methyl-1H-pyrazole (compound 3.1)

30 Methyl 2-chlorosulfonyl-4-chlorobenzoate

At from 0 to 5°C, a solution of 60.9 g (0.88 mol) of sodium nitrite in 100 ml of water was added dropwise to a solution of 139 g (0.75 mol) of methyl 2-amino-4-chlorobenzoate in 400 ml of concentrated hydrochloric acid and the mixture was stirred at 0°C for another hour.

35 In a second apparatus, 3 g of copper(II) chloride, 3 g of benzyltriethylammonium chloride, 10 ml of water and 400 ml of 1,2-dichloroethane were combined and 64 g (1 mol) of sulfur dioxide were introduced.

40 The diazonium salt described above was subsequently added at from 10 to 15°C, and the mixture was slowly heated to 50°C. A further 54 g (0.84 mol) of sulfur dioxide were then introduced, and stirring was continued at 50°C for another 30 minutes. After cooling, 7.4 g (0.1 mol) of chlorine gas were then introduced at room temperature, stirring was continued for 15 minutes and the phases which had formed were then separated. The organic phase was dried and the solvent was

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removed. This gave 207 g of methyl 2-chlorosulfonyl-4-chlorobenzoate.

^1H NMR (CDCl_3 , δ in ppm): 4.00 (s, 3H); 7.75 (m, 2H); 8.18 (m, 1H)

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Methyl 2-mercapto-4-chlorobenzoate

Over a period of 1.5 hours, 243.5 g (3.7 mol) of zinc powder were added a little at a time to a suspension of 205 g (0.75 mol) of methyl 2-chlorosulfonyl-4-chlorobenzoate in 1 l of concentrated hydrochloric acid and 375 g of ice. The mixture was stirred for another 3 hours and slowly heated to 70°C. After 2 hours at this temperature, the mixture was cooled. The reaction mixture was allowed to stand at room temperature for 12 hours and then extracted with ethyl acetate, the combined organic phases were dried and the solvent was removed. This gave 125.4 g (83%) of methyl 2-mercapto-4-chlorobenzoate.

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^1H NMR (CDCl_3 , δ in ppm): 3.95 (s, 3H); 4.88 (s, 1H); 7.10 (m, 1H); 7.30 (m, 1H); 7.96 (d, 1H).

Methyl 2-(2-hydroxycarbonyleth-1-yl)thio-4-chlorobenzoate

179.5 g (1.3 mol) of potassium carbonate and, a little at a time, 94.5 g (0.62 mol) of 3-bromopropionic acid were added to a solution of 125.4 g (0.62 mol) of methyl 2-mercapto-4-chlorobenzoate in 1.5 l of acetone, and the reaction mixture was stirred at room temperature for 12 hours. The solvent was distilled off, the residue was taken up in water and the mixture was extracted with diethyl ether. The aqueous phase was then made acidic using concentrated hydrochloric acid, and the resulting precipitate was filtered off with suction and dried. This gave 150 g (88%) of methyl

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2-(2-hydroxycarbonyleth-1-yl)thio-4-chlorobenzoate.
M.p.: 133 to 136°C

Methyl 5-chloro-4-oxothiochromane-8-carboxylate

At 70°C, 50 g (0.18 mol) of methyl 2-(2-hydroxycarbonyleth-1-yl)thio-4-chlorobenzoate were added to 500 g of polyphosphoric acid, and the mixture was stirred for a further 30 minutes. The reaction mixture was then stirred into water and the resulting precipitate was filtered off with suction and dried. This gave 41.1 g (88%) of methyl 5-chloro-4-oxothiochromane-8-carboxylate.

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^1H NMR (CDCl_3 , δ in ppm): 3.08 (m, 4H); 3.96 (s, 3H); 7.14 (d, 1H); 7.95 (d, 1H).

Methyl 5-chloro-3-(N,N-dimethylaminomethylidene)-
4-oxothiochromane-8-carboxylate

30 g (0.078 mol) of methyl
5-chloro-4-oxothiochromane-8-carboxylate in 300 ml of
N,N-dimethylformamide dimethyl acetal were refluxed for 6
hours. Volatile components were then distilled off, the
residue was taken up in methylene chloride and the organic
phase was washed with water. Drying and removal of the
solvent gave 35.3 g (97%) of methyl
5-chloro-3-(N,N-dimethylaminomethylidene)-4-oxothiochromane-
8-carboxylate.

^1H NMR (CDCl_3 , δ in ppm): 3.18 (s, 6H); 3.80 (s, 2H); 3.95 (s, 3H); 7.24 (d, 1H); 7.64 (s, 1H); 7.82 (d, 1H).

2-Methyl-6-methoxycarbonyl-9-chloro-[1]-thiochromano[4,3-c]-
pyrazole

1.3 g (29.2 mmol) of methylhydrazine were added dropwise to a
solution of 7.0 g (22.5 mmol) of methyl
5-chloro-3-(N,N-dimethylaminomethylidene)-4-oxothiochromane-
8-carboxylate in 700 ml of ethanol, and the mixture was
refluxed for 2 hours. The solvent was removed and the residue
was chromatographed over silica gel using ethyl
acetate/cyclohexane (2:3) as mobile phase. This gave 4.0 g
(60%) of 2-methyl-6-methoxycarbonyl-9-chloro-[1]-
thiochromano[4,3-c]pyrazole.

^1H NMR (CDCl_3 , δ in ppm): 3.76 (s, 2H); 3.95 (s, 3H); 4.00 (s, 3H); 7.24 (s, 1H); 7.36 (d, 1H); 7.70 (d, 1H).

2-Methyl-6-hydroxycarbonyl-9-chloro-[1]-thiochromano[4,3-c]
pyrazole

4.0 g (13.6 mmol) of 2-methyl-6-methoxycarbonyl-9-chloro-[1]-
thiochromano[4,3-c]pyrazole in 100 ml of methanol/water
(1:1) were refluxed with 0.8 g (20 mmol) of sodium hydroxide
for 1 hour. The organic solvent was removed under reduced
pressure and the residue was extracted with ethyl acetate.
The aqueous phase was acidified using concentrated
hydrochloric acid and the resulting precipitate was filtered
off with suction and dried. This gave 3.5 g (92%) of
2-methyl-6-hydroxycarbonyl-9-chloro-[1]-thiochromano[4,3-c]-
pyrazole

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¹H NMR (CDCl₃, δ in ppm): 3.80 (s, 2H); 3.96 (s, 3H); 7.40 (d, 1H); 7.65 (m, 2H).

4-(2-Methyl-9-chloro-[1]-thiochromano[4,3-c]pyrazol-6-yl)-
carbonyl-5-hydroxy-1-methyl-1H-pyrazole (compound 3.1)

A mixture of 0.60 g (2.1 mmol) of
2-methyl-6-hydroxycarbonyl-9-chloro-[1]-thiochromano[4,3-c]-
pyrazole and 0.21 g (2.1 mmol) of
N,N-dicyclohexylcarbodiimide in 20 ml of acetonitrile was
stirred at room temperature overnight. The mixture was
admixd with in each case 500 ml of ethyl acetate and 2%
strength sodium carbonate solution, the resulting precipitate
was filtered off, the organic phase was dried and the solvent
was removed. The residue was then refluxed with 0.59 g
(4.3 mmol) of potassium carbonate in 5 ml of 1,4-dioxane for
3 hours. After cooling, the mixture was extracted with
diethyl ether and the aqueous phase was acidified to pH 3.
The resulting precipitate was filtered off with suction and
dried. This gave 0.14 g of
4-(2-methyl-9-chloro-[1]-thiochromano[4,3-c]pyrazol-6-yl)-
carbonyl-5-hydroxy-1-methyl-1H-pyrazole.
M.p.: 168 - 171°C

3. (5-Hydroxy-1-methyl-1H-pyrazol-4-yl)-(6-methoxy-3a,4-dihydro-
3H-chromeno[4,3-c]isoxazolin-9-yl)methanone (compound 2.3)

Methyl 2-hydroxy-3-formyl-4-methoxybenzoate

At from 0 to 5°C, a solution of 209.0 g (1.1 mol) of titanium
tetrachloride in 150 ml of methylene chloride was added
dropwise to a solution of 50.1 g (0.275 mol) of methyl
2-hydroxy-4-methoxybenzoate and 88 g (0.725 mol) of
dichloromethoxymethane in 400 ml of methylene chloride, and
the mixture was stirred at room temperature overnight. The
mixture was then stirred into ice-water and extracted with
methylene chloride. The combined organic phases were washed
with sodium bicarbonate solution, water and sodium chloride
solution and dried, and the solvent was then removed. Silica
gel chromatography using cyclohexane/ethyl acetate = 1:1 gave
24.5 g (42%) of methyl 2-hydroxy-3-formyl-4-methoxybenzoate
in the form of a colorless solid of m.p.: 123 - 124°C.
¹H NMR (CDCl₃, δ in ppm): 3.92 (s, 3H); 3.98 (s, 3H); 6.49 (d,
1H); 8.19 (d, 1H); 10.39 (s, 1H).

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Methyl 2-allyloxy-3-formyl-4-methoxybenzoate

At room temperature, 23.2 g (0.192 mol) of allyl bromide were added dropwise to a mixture of 21.0 g (0.375 mol) of potassium hydroxide and 20.2 g (0.096 mol) of methyl 2-hydroxy-3-formyl-4-methoxybenzoate in 500 ml of dimethyl sulfoxide, and the mixture was stirred at room temperature for 4 hours. The mixture was subsequently stirred into 1.5 l of 3% strength aqueous hydrochloric acid and extracted with ethyl acetate. The combined organic phases were washed with water and dried, and the solvent was removed. Silica gel chromatography using cyclohexane/ethyl acetate = 1:2 gave 7.7 g (36%) of methyl 2-allyloxy-3-formyl-4-methoxybenzoate in the form of a yellowish oil.

^1H NMR (CDCl_3 , δ in ppm): 3.86 (s, 3H); 3.93 (s, 3H); 4.58 (d, 2H); 5.32 (d, 1H); 5.39 (d, 1H); 6.15 (m, 1H); 6.79 (d, 1H); 8.04 (d, 1H); 10.41 (s, 1H).

6-Methoxy-9-methoxycarbonyl-3a,4-dihydro-3H-chromeno[4,3-c]isoxazoline

Step a)

At room temperature, 4.6 g (18.4 mmol) of methyl 2-allyloxy-3-formyl-4-methoxybenzoate in 70 ml of methanol were added dropwise to a solution of 2.25 g (32.3 mmol) of hydroxylammonium chloride and 2.7 g of pyridine in 70 ml of water. The mixture was stirred at room temperature overnight, 150 ml of water were added, the mixture was extracted with methylene chloride, the combined organic phases were washed with 3% strength aqueous hydrochloric acid and dried, and the solvent was removed. The resulting oxime has a melting point of 126 - 129°C.

Step b)

This oxime was reacted further without any further purification by dissolving it in 40 ml of methylene chloride, followed by dropwise addition of 15.0 ml (25.0 mmol) of sodium hypochlorite solution (12.5% of active chlorine). A spatula tip of sodium acetate was added and the mixture was stirred at room temperature for 12 hours. The organic phase was separated off, the aqueous phase was extracted with methylene chloride, the combined organic phases were washed with water and dried, and the solvent was removed. Silica gel chromatography using cyclohexane/ethyl acetate = 1:1 gave 2.2 g (49%) of 6-methoxy-9-methoxycarbonyl-3a,4-dihydro-3H-chromeno[4,3-c]-isoxazoline in the form of a colorless solid of m.p.: 199 -

203°C.

^1H NMR (CDCl_3 , δ in ppm): 3.84 (s, 3H); 3.98 (s, 3H); 3.8 - 4.0 (m, 2H); 4.16 (dt, 1H); 4.63 (t, 1H); 4.84 (dd, 1H); 6.61 (d, 1H); 7.93 (d, 1H).

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6-Methoxy-9-hydroxycarbonyl-3a,4-dihydro-3H-chromeno[4,3-c]isoxazoline

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At room temperature, a solution of 0.8 g (20.0 mmol) of sodium hydroxide in 7 ml of water was added dropwise to a solution of 2.1 g (8.0 mmol) of 6-methoxy-9-methoxycarbonyl-3a,4-dihydro-3H-chromeno[4,3-c]isoxazoline in 40 ml of methanol, and the mixture was refluxed for 6 hours. After cooling, the solvent was removed and the residue was taken up in about 50 ml of water and washed with methylene chloride. The aqueous phase was subsequently acidified using 10% strength hydrochloric acid (pH = 1 - 2), and the precipitate was filtered off with suction, washed with water and dried at 60°C. This gave 1.7 g (86%) of 6-methoxy-9-hydroxycarbonyl-3a,4-dihydro-3H-chromeno[4,3-c]isoxazoline in the form of colorless crystals.

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^1H NMR (CDCl_3 , δ in ppm): 3.73 (dd, 1H); 3.89 (s, 3H); 3.84 - 3.95 (m, 1H); 4.11 (dd, 1H); 4.54 (dd, 1H); 4.79 (dd, 1H); 6.61 (d, 1H); 7.81 (d, 1H).

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(5-Hydroxy-1-methyl-1H-pyrazol-4-yl)-(6-methoxy-3a,4-dihydro-3H-chromeno[4,3-c]isoxazolin-9-yl)methanone (compound 2.3)

Step a)

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At room temperature, 0.26 g (2.2 mmol) of thionyl chloride and a drop of dimethylformamide were added to a solution of 0.50 g (2.0 mmol) of 6-methoxy-9-hydroxycarbonyl-3a,4-dihydro-3H-chromeno[(4,3-c)]isoxazoline in 30 ml of carbon tetrachloride, and the mixture was stirred at 40 - 50°C for 3 hours. The solvent was subsequently removed under reduced pressure. This gave, in quantitative yield, 6-methoxy-9-chloroformyl-3a,4-dihydro-3H-chromeno[4,3-c]isoxazoline (0.54 g) as a brownish oil.

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Step b)

0.54 g (2 mmol) of 6-methoxy-9-chloroformyl-3a,4-dihydro-3H-chromeno[4,3-c]isoxazoline was dissolved in 30 ml of acetonitrile and, at 0°C, added dropwise to a solution of 0.2 g (2.0 mmol) of 1-methyl-5-hydroxypyrazole and 0.6 g (6.0 mmol) of triethylamine in 20 ml of acetonitrile. The mixture was stirred at room temperature overnight, the solvent was removed, and the residue was taken up in

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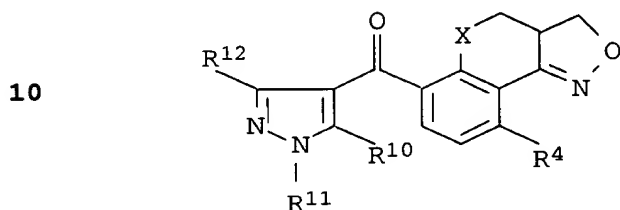
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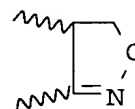
In addition to the compounds above, other tricyclic benzoylpyrazole derivatives of the formula I which were prepared or are preparable in a similar manner are listed in Tables 2 to 5:

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Table 2:



15 Ia where $l = O$, $R^5 = H$,
Y together with the two carbons
to which it is attached forms the
following isoxazoline:



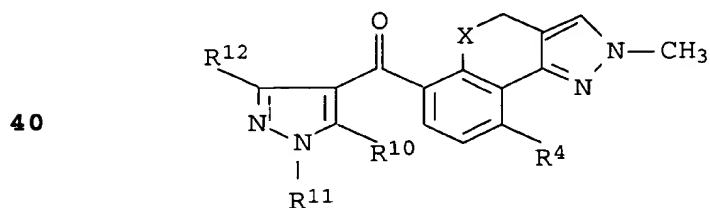
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No.	X	R ⁴	R ¹⁰	R ¹¹	R ¹²	physical data (m.p.[°C]; ¹ H NMR [ppm])
2.1	Bond	SO ₂ CH ₃	OH	CH ₃	H	3.03 (dd, 1H); 3.42 (s, 3H); 3.51 (s, 3H); 4.05 (m, 2H); 4.85 (t, 1H); 7.57 (s, 1H); 7.92 (d, 1H); 8.22 (d, 1H)
2.2	Bond	SO ₂ CH ₃	OCOC ₆ H ₅	CH ₃	H	3.22 (s, 3H); 3.34 (m, 2H); 3.81 (s, 3H); 3.98 (m, 2H); 4.81 (t, 1H); 7.20 - 8.21 (m, 8H);
2.3	O	OCH ₃	OH	CH ₃	H	236 - 238
2.4	O	OCH ₃	OH	C(CH ₃) ₃	H	223 - 225
2.5	O	OCH ₃	OCO(3-F-C ₆ H ₄)	CH ₃	H	oil

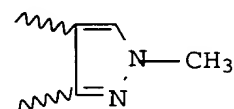
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35 Table 3:



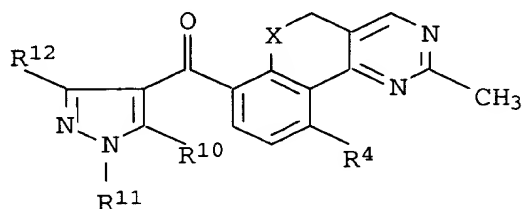
45 Ia where $R^5 = H$,
Y together with the two carbons to which
it is attached forms the following
methyl-substituted pyrazole:



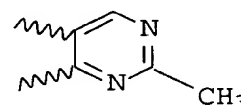
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No.	X	R ⁴	R ¹⁰	R ¹¹	R ¹²	physical data (m.p. [°C])
3.1	S	Cl	OH	CH ₃	H	168 - 171
3.2	S	Cl	OH	CH ₂ CH ₃	H	115
3.3	S	SCH ₃	OH	CH ₃	H	245
3.4	S	SCH ₃	OH	CH ₂ CH ₃	H	222

Table 4:

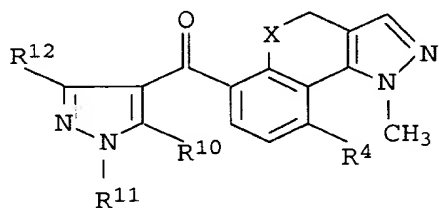


Ia where R⁵ = H,
Y together with the two carbons to which
it is attached forms the following
methyl-substituted pyrimidine:



No.	X	R ⁴	R ¹⁰	R ¹¹	R ¹²	physical data (m.p. [°C]; ¹ H NMR [ppm])
4.1	S	Cl	OH	CH ₃	H	180°C
4.2	S	Cl	OH	CH ₂ CH ₃	H	112°C

Table 5:



Nr.	X	R ⁴	R ¹⁰	R ¹¹	R ¹²	physical data (m.p. [°C]; ¹ H NMR [ppm])
5.1	O	SCH ₃	OH	CH ₃	H	201

The compounds of the formula I and their agriculturally useful
salts are suitable, both in the form of isomer mixtures and in
the form of the pure isomers, as herbicides. The herbicidal
compositions comprising compounds of the formula I control
vegetation on non-crop areas very efficiently, especially at high
rates of application. They act against broad-leaved weeds and
grass weeds in crops such as wheat, rice, maize, soya and cotton

without causing any significant damage to the crop plants. This effect is mainly observed at low rates of application.

Depending on the application method in question, the compounds of
5 the formula I, or herbicidal compositions comprising them, can additionally be employed in a further number of crop plants for eliminating undesirable plants. Examples of suitable crops are the following:

- 10 *Allium cepa*, *Ananas comosus*, *Arachis hypogaea*, *Asparagus officinalis*, *Beta vulgaris* spec. *altissima*, *Beta vulgaris* spec. *rapa*, *Brassica napus* var. *napus*, *Brassica napus* var. *napobrassica*, *Brassica rapa* var. *silvestris*, *Camellia sinensis*, *Carthamus tinctorius*, *Carya illinoensis*, *Citrus limon*, *Citrus*
15 *sinensis*, *Coffea arabica* (*Coffea canephora*, *Coffea liberica*), *Cucumis sativus*, *Cynodon dactylon*, *Daucus carota*, *Elaeis guineensis*, *Fragaria vesca*, *Glycine max*, *Gossypium hirsutum*, (*Gossypium arboreum*, *Gossypium herbaceum*, *Gossypium vitifolium*), *Helianthus annuus*, *Hevea brasiliensis*, *Hordeum vulgare*, *Humulus*
20 *lupulus*, *Ipomoea batatas*, *Juglans regia*, *Lens culinaris*, *Linum usitatissimum*, *Lycopersicon lycopersicum*, *Malus spec.*, *Manihot esculenta*, *Medicago sativa*, *Musa spec.*, *Nicotiana tabacum* (*N. rustica*), *Olea europaea*, *Oryza sativa*, *Phaseolus lunatus*, *Phaseolus vulgaris*, *Picea abies*, *Pinus spec.*, *Pisum sativum*,
25 *Prunus avium*, *Prunus persica*, *Pyrus communis*, *Ribes sylvestre*, *Ricinus communis*, *Saccharum officinarum*, *Secale cereale*, *Solanum tuberosum*, *Sorghum bicolor* (s. *vulgare*), *Theobroma cacao*, *Trifolium pratense*, *Triticum aestivum*, *Triticum durum*, *Vicia faba*, *Vitis vinifera* and *Zea mays*.

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In addition, the compounds of the formula I may also be used in crops which tolerate the action of herbicides owing to breeding, including genetic engineering methods.

- 35 The compounds of the formula I, or the herbicidal compositions comprising them, can be used for example in the form of ready-to-spray aqueous solutions, powders, suspensions, also highly-concentrated aqueous, oily or other suspensions or dispersions, emulsions, oil dispersions, pastes, dusts, materials
40 for broadcasting, or granules, by means of spraying, atomizing, dusting, spreading or watering. The use forms depend on the intended purpose; in any case, they should guarantee the finest possible distribution of the active compounds according to the invention.

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The herbicidal compositions comprise a herbicidally effective amount of at least one compound of the formula I or an agriculturally useful salt of I and auxiliaries which are customarily used for formulating crop protection agents.

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Suitable for use as inert auxiliaries are essentially the following:

- mineral oil fractions of medium to high boiling point, such as
- 10 kerosene and diesel oil, furthermore coal-tar oils and oils of vegetable or animal origin, aliphatic, cyclic and aromatic hydrocarbons, for example paraffin, tetrahydronaphthalene, alkylated naphthalenes and their derivatives, alkylated benzenes or their derivatives, alcohols such as methanol, ethanol,
- 15 propanol, butanol and cyclohexanol, ketones such as cyclohexanone, strongly polar solvents, for example amines such as N-methylpyrrolidone, and water.
- Aqueous use forms can be prepared from emulsion concentrates,
- 20 suspensions, pastes, wettable powders or water-dispersible granules by adding water. To prepare emulsions, pastes or oil dispersions, the tricyclic benzoylpyrazole derivatives of the formula I, either as such or dissolved in an oil or solvent, can be homogenized in water by means of a wetting agent, tackifier,
- 25 dispersant or emulsifier. Alternatively, it is possible to prepare concentrates comprising active compound, wetting agent, tackifier, dispersant or emulsifier and, if desired, solvent or oil, which are suitable for dilution with water.
- 30 Suitable surfactants are the alkali metal salts, alkaline earth metal salts and ammonium salts of aromatic sulfonic acids, e.g. ligno-, phenol-, naphthalene- and dibutyl-naphthalenesulfonic acid, and of fatty acids, alkyl- and alkylarylsulfonates, alkyl sulfates, lauryl ether sulfates and fatty alcohol sulfates, and
- 35 salts of sulfated hexa-, hepta- and octadecanols, and also of fatty alcohol glycol ethers, condensates of sulfonated naphthalene and its derivatives with formaldehyde, condensates of naphthalene or of the naphthalenesulfonic acids with phenol and formaldehyde, polyoxyethylene octylphenol ether, ethoxylated
- 40 isooctyl-, octyl- or nonylphenol, alkylphenyl or tributylphenyl polyglycol ether, alkylaryl polyether alcohols, isotridecyl alcohol, fatty alcohol/ethylene oxide condensates, ethoxylated castor oil, polyoxyethylene alkyl ethers or polyoxypropylene alkyl ethers, lauryl alcohol polyglycol ether acetate, sorbitol
- 45 esters, lignin-sulfite waste liquors or methylcellulose.

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Powders, materials for broadcasting and dusts can be prepared by mixing or grinding the active compounds together with a solid carrier.

- 5 Granules, e.g. coated granules, impregnated granules and homogeneous granules, can be prepared by binding the active compounds to solid carriers. Solid carriers are mineral earths such as silicas, silica gels, silicates, talc, kaolin, limestone, lime, chalk, bole, loess, clay, dolomite, diatomaceous earth, 10 calcium sulfate, magnesium sulfate and magnesium oxide, ground synthetic materials, fertilizers such as ammonium sulfate, ammonium phosphate, ammonium nitrate and ureas, and products of vegetable origin, such as cereal meal, tree bark meal, wood meal and nutshell meal, cellulose powders, or other solid carriers.

- 15 The concentrations of the compounds of the formula I in the ready-to-use preparations can be varied within wide ranges. In general, the formulations comprise approximately from 0.001 to 98% by weight, preferably 0.01 to 95% by weight, of at least one 20 active compound. The active compounds are employed in a purity of from 90% to 100%, preferably 95% to 100% (according to NMR spectrum).

The following formulation examples illustrate the preparation of 25 such formulations:

- I. 20 parts by weight of the compound No. 2.2 are dissolved in a mixture composed of 80 parts by weight of alkylated benzene, 10 parts by weight of the adduct of from 8 to 30 10 mol of ethylene oxide to 1 mol of oleic acid N-monoethanolamide, 5 parts by weight of calcium salt of dodecylbenzenesulfonic acid and 5 parts by weight of the adduct of 40 mol of ethylene oxide to 1 mol of castor oil. Pouring the solution into 100,000 parts by weight of water 35 and finely distributing it therein gives an aqueous dispersion which comprises 0.02% by weight of the active compound.
- II. 20 parts by weight of the compound No. 3.1 are dissolved in a mixture composed of 40 parts by weight of cyclohexanone, 40 30 parts by weight of isobutanol, 20 parts by weight of the adduct of 7 mol of ethylene oxide to 1 mol of isooctylphenol and 10 parts by weight of the adduct of 40 mol of ethylene oxide to 1 mol of castor oil. Pouring 45 the solution into 100,000 parts by weight of water and finely distributing it therein gives an aqueous dispersion

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which comprises 0.02% by weight of the active compound.

- III. 20 parts by weight of the compound No. 2.3 are dissolved in a mixture composed of 25 parts by weight of cyclohexanone, 5 65 parts by weight of a mineral oil fraction of boiling point 210 to 280°C and 10 parts by weight of the adduct of 40 mol of ethylene oxide to 1 mol of castor oil. Pouring the solution into 100,000 parts by weight of water and 10 finely distributing it therein gives an aqueous dispersion which comprises 0.02% by weight of the active compound.
- IV. 20 parts by weight of the compound No. 2.4 are mixed thoroughly with 3 parts by weight of the sodium salt of 15 diisobutyl naphthalenesulfonic acid, 17 parts by weight of the sodium salt of a lignosulfonic acid from a sulfite waste liquor and 60 parts by weight of pulverulent silica gel, and the mixture is ground in a hammer mill. Finely 20 distributing the mixture in 20,000 parts by weight of water gives a spray mixture which comprises 0.1% by weight of the active compound.
- V. 3 parts by weight of the compound No. 2.3 are mixed with 97 25 parts by weight of finely divided kaolin. This gives a dust which comprises 3% by weight of the active compound.
- VI. 20 parts by weight of the compound No. 2.4 are mixed 30 intimately with 2 parts by weight of calcium salt of dodecylbenzenesulfonic acid, 8 parts by weight of fatty alcohol polyglycol ether, 2 parts by weight of sodium salt of a phenol/urea/formaldehyde condensate and 68 parts by weight of a paraffinic mineral oil. This gives a stable oily dispersion.
- VII. 1 part by weight of the compound No. 2.2 is dissolved in a 35 mixture composed of 70 parts by weight of cyclohexanone, 20 parts by weight of ethoxylated isooctylphenol and 10 parts by weight of ethoxylated castor oil. This gives a stable emulsion concentrate.
- 40 VIII. 1 part by weight of the compound No. 3.1 is dissolved in a mixture composed of 80 parts by weight of cyclohexanone and 20 parts by weight of Wettol® EM 31 (= nonionic emulsifier based on ethoxylated castor oil). This gives a stable 45 emulsion concentrate.

The compounds of the formula I or the herbicidal compositions can be applied pre- or post-emergence. If the active compounds are

less well tolerated by certain crop plants, application techniques may be used in which the herbicidal compositions are sprayed, with the aid of the spraying equipment, in such a way that as far as possible they do not come into contact with the
5 leaves of the sensitive crop plants, while the active compounds reach the leaves of undesirable plants growing underneath, or the bare soil surface (post-directed, lay-by).

The rates of application of the compound of the formula I are
10 from 0.001 to 3.0, preferably 0.01 to 1.0, kg/ha of active substance (a.s.), depending on the control target, the season, the target plants and the growth stage.

To widen the spectrum of action and to achieve synergistic
15 effects, the tricyclic benzylpyrazole derivatives of the formula I may be mixed with a large number of representatives of other herbicidal or growth-regulating active compound groups and applied concomitantly. Suitable components for mixtures are, for example, 1,2,4-thiadiazoles, 1,3,4-thiadiazoles, amides,
20 aminophosphoric acid and its derivatives, aminotriazoles, anilides, aryloxy-/heteroaryloxyalkanoic acids and their derivatives, benzoic acid and its derivatives, benzothiadiazinones, 2-aryl-1,3-cyclohexanediones, heteroaryl aryl ketones, benzylisoxazolidinones, meta-CF₃-phenyl derivatives,
25 carbamates, quinoline carboxylic acid and its derivatives, chloroacetanilides, cyclohexenone oxime ether derivatives, diazines, dichloropropionic acid and its derivatives, dihydrobenzofurans, dihydrofuran-3-ones, dinitroanilines, dinitrophenols, diphenyl ethers, dipyridyls, halocarboxylic acids
30 and their derivatives, ureas, 3-phenyluracils, imidazoles, imidazolinones, N-phenyl-3,4,5,6-tetrahydrophthalimides, oxadiazoles, oxiranes, phenols, aryloxy- and heteroaryloxyphenoxypropionic esters, phenylacetic acid and its derivatives, 2-phenylpropionic acid and its derivatives,
35 pyrazoles, phenylpyrazoles, pyridazines, pyridinecarboxylic acid and its derivatives, pyrimidyl ethers, sulfonamides, sulfonylureas, triazines, triazinones, triazolinones, triazolecarboxamides and uracils.

40 It may furthermore be advantageous to apply the compounds of the formula I, alone or in combination with other herbicides, in the form of a mixture with other crop protection agents, for example together with agents for controlling pests or phytopathogenic fungi or bacteria. Also of interest is the miscibility with
45 mineral salt solutions, which are employed for treating nutritional and trace element deficiencies. Non-phytotoxic oils

and oil concentrates may also be added.

Use Examples

- 5 The herbicidal activity of the tricyclic benzylpyrazole derivatives of the formula I was demonstrated by the following greenhouse experiments:

10 The culture containers used were plastic pots containing loamy sand with approximately 3.0% of humus as the substrate. The seeds of the test plants were sown separately for each species.

15 For the pre-emergence treatment, the active compounds, which had been suspended or emulsified in water, were applied directly after sowing by means of finely distributing nozzles. The containers were irrigated gently to promote germination and growth and subsequently covered with transparent plastic hoods until the plants had rooted. This cover causes uniform germination of the test plants, unless this was adversely
20 affected by the active compounds.

For post-emergence treatment, the test plants were first grown to a plant height of from 3 to 15 cm, depending on the plant habit, and only then treated with the active compounds which had been
25 suspended or emulsified in water. For this purpose, the test plants were either sown directly and grown in the same containers, or they were first grown separately as seedlings and transplanted into the test containers a few days prior to the treatment. The application rate for the post-emergence treatment
30 was 0.5 or 0.25 kg of a.s./ha.

Depending on the species, the plants were kept at 10-25°C or 20-35°C. The test period extended over 2 to 4 weeks. During this time, the plants were tended, and their response to the
35 individual treatments was evaluated.

Evaluation was carried out using a scale from 0 to 100. 100 means no emergence of the plants, or complete destruction of at least the above-ground parts, and 0 means no damage, or normal course
40 of growth.

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The plants used in the greenhouse trials were of the following species:

5	Scientific Name	Common Name
	Chenopodium album	lambsquarters (goosefoot)
10	Echinochloa crusgalli	barnyardgrass
	Setaria viridis	green foxtail
	Solanum nigrum	black nightshade
	Veronica ssp.	speadwell

At application rates of 0.5 or 0.25 kg/ha, the compound 2.2 shows very good activity against the abovementioned undesired broad-leaved weeds and weed grasses when applied by the post-emergence method.

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